

May 9, 2005

Project No. 780

Mr. Dale Radford Sonoma County Department of Public Health 475 Aviation Boulevard, Suite 220 Santa Rosa, California 95403

Well Installation Workplan 200 Morris Street Sebastopol, California

Dear Mr. Radford:

Brunsing Associates, Inc. (BAI) has prepared this workplan for an additional soil and groundwater investigation to further investigate petroleum hydrocarbons released into the environment from a former underground storage tank (UST) located at the former Barlow Company, 200 Morris Street, Sebastopol, California (Plate 1). This workplan was prepared in response to a letter from the Sonoma County Department of Health Services - Environmental Health Division (SCDHS-EHD) dated March 11, 2005 that concurred with BAI's recommendations for an additional vapor extraction well at the site, and a telephone conversation on March 21, 2005 in which it was agreed that some of the formerly proposed soil borings should instead be monitoring wells. The previously proposed borings were included in BAI's workplan dated May 21, 2003. After the investigation proposed herein is completed, an evaluation will be made to determine whether the offsite borings proposed in the May 21, 2003 workplan are still necessary. The scope of work proposed herein includes installation of one additional vapor extraction well, abandonment of well MW-2, installation of three additional groundwater monitoring wells, and preparation of a report.

## SITE HISTORY

The site was developed in 1940 and was occupied by The Barlow Company (Barlow) from 1973 to 2004. Two areas, designated as Tank Area No. 1 and Tank Area No. 2 (Plate 2), have been the primary focus of investigations at the site. Groundwater monitoring has been ongoing and is associated primarily with Tank Area No. 2.

Improvements to the storm sewer system (storm drain) were carried out during 1992 by tunneling beneath the main building. At that time, a gasoline odor was detected. A 550-gallon gasoline underground storage tank located beneath the building at Tank Area No. 2 was removed on March 20, 1992 (Plate 2). From 1991 through 1993, 11 monitoring wells and one piezometer were installed and

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soil probes SP-1 through SP-12, borings B-1 through B-13, and borings K-1 through K-6 were drilled and sampled under the direction of Kleinfelder, Inc. A summary of the investigations performed by Kleinfelder, Inc. is included in Kleinfelder's "Addendum Workplan for Soil and Ground Water Assessment, Barlow Company, 200 Morris Street, Sebastopol, California", dated April 27, 1994. Well construction details are presented in Table 1.

An additional investigation was performed by BAI in November and December 1995 and January 1996. The results are presented in BAI's report dated February 22, 1996. BAI's investigation included the installation of two monitoring wells (MW-12 and MW-13), three piezometers (P-2, P-3, and P-4), one groundwater extraction well (EX-1), one vapor extraction well (VEW-1), and three soil vapor pressure probes (PP-1, PP-2, and PP-3; Plate 2). An aquifer test and a soil vapor extraction pilot study were also performed to provide data for evaluation of remedial options.

In April 1997, a sensitive receptor survey was performed by BAI. The sensitive receptor survey identified the onsite production well as the only well within a 500-foot radius of Tank Area 2. The production well was used to provide coolant water for the Barlow apple processing plant. In November 1997, a groundwater sample was collected from the production well and analyzed for total petroleum hydrocarbons (TPH) as gasoline, benzene, toluene, ethylbenzene, and xylenes (BTEX), and volatile organic compounds (VOCs) using EPA Test Method 8010. The groundwater sample collected from the production well reportedly contained 0.9 micrograms per liter ( $\mu$ g/l) of 1,2-dichloroethane (1,2-DCA), but no other compounds. Groundwater analytical data is summarized in Table 2.

Historically, floating product was measured in the casing of well MW-1 at thicknesses ranging from 0.20 to 4.03 feet. Because the screen interval for well MW-1 is from 13 to 25 feet below ground surface (bgs) and the depth to the fluid/air interface historically ranged from 9.83 to 16.90 feet below top of casing at well MW-1, well MW-14 was installed in December 1998 approximately 3 feet away from well MW-1 with a screen interval of 5 to 25 feet bgs, using resin coated sand (AC PAK 12/20) for the filter pack material.

BAI prepared an Interim Remediation Workplan dated October 28, 1999 that proposed extracting soil vapors from well MW-14. A soil vapor extraction system with above ground piping to well MW-14 was installed. From September 2000 until December 2001, the soil vapor extraction system operated intermittently. The results of the soil vapor extraction were presented in BAI's letter dated June 6, 2002.

In 2001 and 2002, BAI performed a two-phase investigation, which included the drilling and sampling of 18 soil borings. The purpose of the investigation was to evaluate the vertical and lateral extent of groundwater contamination and to investigate potential sources of groundwater contamination on the Barlow property. This data was presented in BAI's "Soil and Groundwater Investigation Report", dated January 17, 2003. In that report, BAI recommended that an additional investigation be performed and that quarterly groundwater monitoring be continued.



BAI also prepared an Interim Remediation Workplan, dated February 27, 2003 to address the floating product. In accordance with discussions with the SCDHS-EHD and the California Underground Storage Tank Cleanup Fund (Fund), the interim remediation was on hold until a deeper well was installed inside the building to monitor floating product. Monitoring well MW-15 was installed in February 2004 to monitor floating product.

Product has been periodically bailed from well MW-15. Product removal data from June through December 2004 are presented in Table 3. The interim remediation system was installed and piping was connected to well MW-15. Startup of the interim remediation system is anticipated in the near future.

The borings for wells MW-16, MW-17, MW-18, MW-19, and MW-20 were drilled, and the wells installed between September 1, 2004 and October 4, 2004. The additional monitoring wells were installed to monitor the floating product and dissolved hydrocarbons plume beneath the building. The results of this investigation are included in BAI's "Soil and Groundwater Investigation and Groundwater Monitoring Report", dated February 9, 2005. Soil sample analytical data for the soil borings is presented in Table 4.

## MONITORING WELL MW-2 ABANDONMENT

## Background

Because of a decrease in the water table, all shallow zone wells, except for well MW-2, are presently dry. Groundwater in well MW-2 has been 10 to 15 feet higher than groundwater in deep zone surrounding wells. There appears to be a mounding of groundwater in the vicinity of well MW-2 that may extend as far as well MW-11 and possible MW-20. BAI's staff measured the chlorine concentrations in water in wells MW-2, MW-11, and EX-1 with the City of Sebastopol staff. The reported concentrations of chlorine in wells MW-2 and MW-11 correspond to the typical concentrations found in City water, according to City personnel (chlorine was not reported in well EX-1). Groundwater elevation data is presented in Table 5. Analytical result for groundwater samples collected from soil borings are presented in Table 6.

One possible explanation for the mounding of chlorinated water is that a water supply leak has entered the storm drain backfill and is flowing into well MW-2 from the intersection of the storm drain invert and the upper screened interval of well MW-2. On October 26, 2004, BAI excavated two test pits in the storm drain trench, one east of the onsite building, and another pit closer to Morris Street (Test Pits 1 and 2; Plate 3). Both test pits were excavated to below the invert of the storm drain pipe. No water was observed in either excavation. A third test pit (Test Pit 3) was excavated in the storm drain backfill, adjacent to the building, between the storm drain and well MW-2. The area excavated appeared to be part of a previous excavation that had been backfilled with drain rock. Water was encountered in the excavation between 10 and 11 feet bgs, which was approximately the same depth to water in well MW-2.

The Barlow Company shut down their water supply system on March 12, 2004 for approximately eight hours to test for leaks in the buildings water system.



During that time there was no indication that the water supply piping for the plant was leaking. The water supply system was again shut down from December 24, 2004 to December 27, 2004. This shut-down was to test the theory that the former excavation adjacent to the building was acting as a sump, collecting water from a leak in or near the building, and then discharging the water to well MW-2.

There was no change in the depth to groundwater in well MW-2 over the three day shut-down period in December 2004. This suggests that the source of water continued during the shut-down period, therefore, the source is not inside the building.

Although the ultimate source of the chlorinated water has not been identified, the connection between the water source and the subsurface is believed to be the storm drain excavation, which supplies water to the water-bearing zones through well MW-2. Therefore, BAI proposes that well MW-2 be abandoned and not replaced, because wells MW-11, MW-16, and MW-20 adequately monitor the area previously monitored by well MW-2.

## Well Abandonment

Prior to well abandonment, a permit for abandonment of well MW-2 will be obtained from the SCDHS-EHD before initiating drilling activities. The well will be abandoned by a licensed C-57 drilling contractor, by over-drilling the well casing with hollow-stem augers to remove as much of the well casing materials as possible. After the well materials have been drilled out, the borehole will be sealed with a cement grout/bentonite slurry mixture to seal off the groundwater from the surface and eliminate any potential contaminant pathways to groundwater. The soil and water generated during abandonment of the well will be stored onsite in 55-gallon drums for later disposal.

## SOIL AND GROUNDWATER INVESTIGATION

## Soil Boring and Monitoring Well Locations

For the January 2005 sampling event, well MW-15 contained 2.04 feet of floating product. BAI has installed an interim remediation system to remediate the floating product beneath the building. Currently, wells MW-14 and MW-15 are connected to the system. Because high concentrations of petroleum hydrocarbons were reported in soil samples collected from well boring MW-15, from 5 to 20 feet bgs, and well MW-15 is screened from 25 to 45 feet bgs, a shallow vapor extraction well will be installed near well MW-15 for vapor remediation.

In addition to the vapor extraction well near well MW-15, two monitoring wells will be installed to monitor the high petroleum hydrocarbon concentrations in groundwater and the floating product plume. As discussed in BAI's March 21, 2005 monitoring report, the high TPH as gasoline concentration plume in the deep water-bearing zone appears to be bifurcated due to the infiltration of the chlorinated water (Plate 5). BAI proposes that one additional well be installed



inside the building and that one additional well be installed outside of the building to monitor this plume.

As proposed in the May 21, 2003 workplan, a boring will be drilled south of boring H-10 and one boring will be drilled northwest of boring H-7. The purpose of these borings will be to evaluate the vertical and lateral extent of groundwater contamination. The proposed boring and well locations are shown on Plate 4.

## **Drilling Methods**

A drilling permit will be obtained from the SCDHS-EHD, and Underground Service Alert will be notified at least 48 hours prior to commencing drilling operations. A C-57 licensed drilling contractor with a drill rig equipped with hollow-stem augers, will be retained to drill the borings and construct the wells. It is anticipated that the borings for monitoring wells will extend down at least to 45 feet bgs, and that the boring for the vapor extraction well will extend down to 25 feet bgs. It is anticipated that the two borings outside of the building will extend down to at least 60 feet bgs.

The borings will be logged by a qualified geologist according to the Unified Soil Classification System. Soil samples collected from the borings will be collected at approximately 5-foot intervals, at lithologic changes, near the vadose zone/groundwater interface, and at areas of obvious soil contamination using a split-spoon sampler lined with brass tubes. Soil samples for analysis of TPH as gasoline and volatile organic compounds will be collected from the same sample drive using an approved EPA Test Method 5035 sampling device, to comply with requirements for collection of soil samples for volatile organic analysis, as specified in EPA Test Method 5035, if possible. Multiple, disposable approved 5035 sample containers will be collected to allow for processing of samples for low concentration or high concentration analysis, as appropriate.

The sample drives will be screened in the field for total volatile organic compounds (VOCs) using a photoionization detector (PID), and the sample drives that produce the highest PID readings in field screening will be submitted for analysis. The samples will be labeled and stored in a cooled ice chest until delivery to a California-certified analytical laboratory under chain-of-custody protocol. The samples will be delivered to the analytical laboratory such that sample preservation can be completed within 48 hours of collection, as required by EPA Test Method 5035 protocol. Three to five soil samples collected from the two borings drilled inside the building will be analyzed for TPH as gasoline, BTEX, and volatile organic compounds including petroleum oxygenates and lead scavengers. We anticipate that soil samples from the three borings drilled outside of the building will not be analyzed due to their proximity to the source and previous soil analytical data. All samples will be analyzed by a California-certified analytical laboratory.

The soil and water generated during drilling will be placed in labeled 55-gallon drums and left onsite. Drilling equipment will be steam cleaned prior to drilling and the sampling equipment will be cleaned prior to use with a laboratory detergent followed by a deionized water rinse.



## Well Installation

In order to provide additional data to evaluate the extent of groundwater contamination, the borings drilled inside the building and the boring drilled near boring H-9 will be converted to two-inch diameter wells using flush, threaded Schedule 40 PVC and 0.010-inch slotted screen. The vapor extraction well will be screened from 5 to 25 feet bgs, and the monitoring wells will be screened from 30 to 45 feet bgs. A threaded bottom cap will be placed over the end of each screen to prevent sediment from entering the well. Lonestar 2/12 sand will be placed in the annulus between the well casing and the boring, from the bottom of each boring to 2 feet above the well screen. A 2-foot thick bentonite seal will be placed above the bentonite seal to near ground surface.

The well installed inside the former Barlow building in the vicinity of well MW-15 will be connected to the interim remediation system by trenching from the well head to the pipe connecting well MW-15 to the remediation system. A pipe will be installed to connect the two wells prior to backfilling the trench with cement grout. All of the other wells will be completed below grade with locking well caps and traffic-rated utility boxes.

## Well Development

The monitoring wells will be developed a minimum of 48 hours following completion of well construction, by pumping, surging, and/or bailing. The wells will be developed until groundwater is relatively clear and free of sediment and pH, conductivity, and temperature measurements stabilize. Groundwater removed during development will be stored onsite in labeled 55-gallon drums. Because the vapor extraction well will be screened above the water table, the well will not be developed.

## **Groundwater Sampling from Soil Borings**

Two groundwater samples will be collected from the borings not converted to wells. Groundwater samples collected from the first encountered groundwater will be collected from the borings using a HydroPunch sampler or by placing a temporary well casing in the boring. Groundwater samples collected from deeper water-bearing zones will by collected using a HydroPunch sampler. Samples collected using a HydroPunch device will be collected by lowering a HydroPunch sampler and driving the sampler into the water-bearing soils beneath the bottom of the boring. A sample will then be collected using a clean bailer and will be transferred to laboratory-supplied containers. If groundwater samples are collected from temporary wells, temporary factory-slotted casing (0.010 inch slots) will be placed into the boring. Each temporary well will be purged of at least one casing volume of water prior to collecting a water sample, if feasible. The temporary well will be sampled by lowering a clean factory-sealed bailer into the casing, then transferring the sample to laboratory supplied containers. The samples will be sealed, labeled, and stored in a cool ice chest until delivered to a California-certified laboratory for analysis.



## **SCHEDULE**

After this workplan has been approved by the SCDHS-EHD, a monitoring well permit application for installation and a permit application for well abandonment will be submitted to the SCDHS-EHD. BAI will initiate the field work described herein within four weeks of approval of this workplan, and receipt of all permits, contingent on subcontractor availability.

If you have any questions regarding this workplan, please contact David Conley or Diana Dickerson of (AED 85800)

Sincerely,

David E. Conley,

FTE OF CALLED Senior Geologist

Diana M. Dickerson, R.G., R.E.A.

Principal Geologist

## Attachments:

Table 1. Well Construction Details

Table 2. Groundwater Analytical Results Since 1991

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NO. 4795

Table 3. Product Removal From Well MW-15

Table 4. Analytical Results For Soil Samples Collected From Borings Since 1995

Table 5. Groundwater Elevation Data Since 1997

Table 6. Analytical Results for Groundwater Samples Collected from Borings

Plate 1. Site Vicinity Map

Site Map Plate 2.

Plate 3. Storm Drain Excavation Map

Plate 4. Proposed Drilling Locations

TPH as Gasoline in Groundwater, Deep Wells, January 24, 2005 Plate 5.

Appendix A. Groundwater Sampling Protocol

Appendix B. Site Health and Safety Plan

cc: Mr. Ken Martin, Sr.



## **TABLES**



## TABLE 1. WELL CONSTRUCTION DETAILS Sebastopol, California 200 Morris Street

8.5-10.5 8-10 5-7 6-8
10.5-26.5     8.5-10.5       10-28     8-10       7-25     5-7       8-26     6-8
14.5-26.5     68.45     10.3-       13.0-28     71.77     10.       10.0-25     68.70     7       11-26     68.22     8-
28 13.0-28 25 10.0-25 26.5 11-26
2 28 2 25 2 25 2 26.5
26.5 26
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Depths are in feet below original surface grade; casing diameter is in inches.

Elevations are in feet above mean sea level.

KI = Kleinfelder, Inc.

BAI = Brunsing Associates, Inc. MSL = Mean Sea Level.

ns = Not surveyed

\* Well is open at the bottom. \*\* Resin coated sand (AC PAK 12/20) from 7 to 17.5 feet.



Table 2. Groundwater Analytical Results Since 1991 200 Morris Street Sebastopol, California

Test	760	gpı																			lene		/1.56 X											
Other EPA Test	Method 8260	Compounds	(l/gn)	1	1	* *	1	1		1	1	1		*	1		1	R	8	<u>Q</u>	15.7 napthalene	B	3.9 Be/3.00 T/1.56	2	Q.	****	***	***	***	***	****	***	***	****
	1,2-	Dichloroethane	(l/grl)		72			<0.4	4 -	# #		<0.4	14. 44.	*8	* R	* R	* Q		*8	S	Ð	Ð	Q	QN	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
MTBE	(EPA Test	Method 8260)	(l/grl)	•	4		1	1	1	1	-		7	# .L	•		ND (EPA 8020/5)	QN	R	ON N	ND	ND DN	ON.	2	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		Xylenes	$(\mu g/l)$	1,300	<0.5	6,200	<0.5	<0.5	31	45	12	1.5	B	B	R	ON ON	ON	S	R	Ą	S S	S	2.5	11,000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		Ethylbenzene	(l/gn)	2,900	2,400	1,500	<0.5	<0.5	28	46	13	2.7	QN	B	e E	Ð	QN	Ð	QN	R	QS.	QN	1.1	2,100	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		Toluene	(l/grl)	44,000	<0.5	12,000	<0.5	<0.5	23	40	12	1.7	QN	QZ	Q.	2	Q	B	B	R	£	QN	2.9	8,000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		Benzene	(l/grl)	28,000	8,900	4,800	<0.5	<0.5	25	40	6.6	1.7	S	QZ	R	Q	2	2	2	R	9.13	QN	16	1,800	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TPH as	diesel	(mg/l)		:	50 ***	*	t		1	1	-	R		:	1 1	ł						;	1	-	t	i i		:	-:-	-:-	-:	-:	1
	TPH as	gasoline	(mg/l)	110	190	110	<50	<0.05	0.50	1.2	0.17	0.17	B	QN	S	B	2	S	PZ.	ON.	0.56	QN	0.054	110	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
		Date	Sampled	24-Apr-91	3-Feb-92	29-Dec-95	24-Apr-91	3-Feb-92	13-Aug-92	3-Nov-92	3-Dec-92	5-Oct-93	28-Dec-95	15-Apr-97	28-IuI-97	18-Nov-97	18-Feb-98	21-Aug-98	24-Nov-98	25-Feb-99	27-Mav-99	27-Jan-00	15-Jun-00	29-Sep-00	1-Feb-01	17-Dec-01	26-Mar-02	2-Jul-02	20-Sep-02	16-Dec-02	20-Mar-03	24-Jun-03	9-Nov-03	11-Mar-04
		Well	Number	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW.2	MW-2	MW-2	MW-2	MW-2	MW-2



Table 2. Groundwater Analytical Results Since 1991 200 Morris Street Sebastopol, California

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Other EPA Test	Method 8260	Compounds	(l/grl)	* *	* *	•	* 1	1	***************************************	* *	‡ ‡	ŧ		* 1		1	1	* *		* *	1.97 B/1.6 C	1.44 C	QN N	2	ND	QN	QN.	N N		t t		* •
	1,2-	Dichloroethane	(l/grl)	+ -	₹.0>		+ *	* *	***************************************	170	180	l l	42	20	7.5	# #	*QN	0.6 **	* Q	25 **	5.25	16 **	11.6	Q.	B	QN.	ND	< 2.0		*		120 (TCE=4.7) **
MTBE	(EPA Test	Method 8260)	(I/gn)	ţ		• •	1	•	4	1		==	*	*	1	1			•	ND (EPA 8020/950)	QN	Q.	2	2	2	B	ON	< 2.0	-		•	ND (EPA 8020/5)
		Xylenes	(I/grl)	1.5	< 0.5	< 0.5	< 0.5	8.0	Ð	290	49	< 0.5	6.0	< 0.5	< 0.5	15	<u>P</u>	NO	ND	180	ΩN	0.75	ND	QZ	ND	QN	51	< 0.5	< 0.5	1,800	10,000	4,800
TANKS TANKS	•	Ethylbenzene	(l/grl)	3.7	< 0.5	< 0.5	1.5	3.1	QN	88	65	170	1.8	12	< 0.5	97	0.8	0.7	Ą	4.2	Ð	1.5	1.0	NO	ND ND	QN	10	< 0.5	< 0.5	8,500	1,700	580
		Toluene	(l/grl)	9.0	< 0.5	< 0.5	< 0.5	< 0.5	QN	56	< 0.5	< 0.5	6.0	< 0.5	< 0.5	52	92	BZ	B	310	R	1.9	1.0	N N	2	B	32	< 0.5	< 0.5	19,000	13,000	009′9
		Benzene	(l/grl)	35	< 0.5	4.5	6.0	30	3.8	5,600	066	5,200	81	140	30	2,100	7.9	50	B	3,000	18.9	82	37	P	g	R	3.5	< 0.5	< 0.5	7,800	6,800	2,900
	TPH as	diesel	(mg/l)	:	1		1	1	1		*	,	:	:	:	0.46 ***	- 1	1	1	1	1	1		:	1	*		!	1	1	*** 09	ŀ
	TPH as	gasoline	(mg/l)	0.066	<0.05	<0.05	0.06	1.2	S	8.1	3.9	77	0.71	0.70	0.17	3.2	B	0.18	90.0	13	0.11	2.0	1.4	B	Q	2	0.32	< 0.05	<50	74	100	42
		Date	Sampled	24-Apr-91	3-Feb-92	12-May-92	13-Aug-92	3-Nov-92	14-Apr-97	5-Aug-91	3-Feb-92	12-May-02	13-Aug-92	3-Nov-92	5-Oct-93	29-Dec-95	15-Apr-97	28-Jul-97	19-Nov-97	18-Feb-98	21-Aug-98	25-Nov-98	25-Feb-99	28-May-99	28-Jan-00	16-Jun-00	29-Sep-00	2-Feb-01	24-Apr-91	5-Aug-91	29-Dec-95	18-Feb-98
		Well	Number	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5	MW-5



Table 2. Groundwater Analytical Results Since 1991 200 Morris Street Sebastopol, California

Other EPA Test	Method 8260	Compounds	(l/grl)					• •	4 4	3. T		8	R	Q	R		B	R	QN	****	****	****	****	***	****	****	***	***	R	B	****
	1,2-	Dichloroethane	(hg/l)	-	<0.4	* *	<b>₹.0&gt;</b>	4 1	- 4	¥.0>	4 1	1.01	* QZ	0.842	DN.	QN	N	ND	< 1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
MTBE	(EPA Test	Method 8260)	(l/gn)	1			1	1	1	- L		B	N	ON N	DN	B	QQ	ND	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		Xylenes	(µg/l)	< 0.5	< 0.5	8.0	< 0.5	< 0.5	ON N	> 0.6	ND	ΩN	ND	ND	ND	ND	QN	56	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		Ethylbenzene	(l/grl)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	8	> 0.6	ND ND	B	NO NO	R	Ð	R	R	13	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
		Toluene	(l/gn)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	Ð	< 0.5	B	B	Ω	B	Ð	B	B	3.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1777	Benzene	(l/gn)	< 0.5	< 0.5	5.0	< 0.5	< 0.5	Q	< 0.5	e e	R	S	£	8	B	Ą	4.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TPH as	diesel	(mg/l)		ŧ	1 1	1	-:	ŧ		B	1	1	1		1							*	1	: 1	:	1	5	.,	:	
	TPH as	gasoline	(mg/l)	<0.05	<50	<0.05	<50	<0.05	ND	+ +	R	QZ	R	Q	ND	R	Q	0.31	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
		Date	Sampled	5-Aug-91	3-Feb-92	5-Aug-91	3-Feb-92	13-Aug-02	14-Apr-97	5-Oct-93	29-Dec-95	21-Aug-98	24-Nov-98	26-Feb-99	28-May-99	27-Jan-00	16-Jun-00	29-Sep-00	2-Feb-01	17-Dec-01	26-Mar-02	2-Jul-02	20-Sep-02	16-Dec-02	21-Mar-03	24-Tun-03	11-Sep-03	11-Mar-04	7-lun-04	22-Oct-04	24-Jan-05
		Well	Number	MW-6	9-MM	MW-7	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	MW.8	MW-8	MW-8



Table 2. Groundwater Analytical Results Since 1991 200 Morris Street Sebastopol, California

Other EPA Test	Method 8260	Compounds	- 51	===		R	R	R	S S	S	S S	QN QN	<del>Q</del>	****	***	***	****	****	****	****	1.16 PCE	***	S	S	****				1	1	1	R	ON ON	- QN	9	2	S	QN Q
	1,2-	Dichloroethane	7,00	₹0.4	t	OZ.	*QN	B	8	2	<u>R</u>	ON ON	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	<0.5	150		* Q	2.2 **	** 1.	1.0 **	16.1	10 **	12.4	8.58	5.98	4.44	1.37
MTBE	(EPA Test	Method 8260)	/w.Q.,	e e	1	R		Ð	<u>R</u>	0.513	R	R	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	<1.0	** **	ŧ	10 20			ND (EPA 8020/5)	4.68	4.36	2.93	1.73	0.755	ND	3.80
		Xylenes	70,0	< 0.0	Q Z	<u>Q</u>	Q Z	Q	Ą	£	Q.	23	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	3.07	6.23	26'9	< 0.6	ΩZ	ON N	Ð	ON ON	P.	S	Ð	Ð	ΩZ	ND	QN	20
		Ethylbenzene	7.00	< 0.0	ON.	S	QN	9	R	<del>Q</del>	S	4.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5	< 2.5	1.24	< 0.6	Q	QN	Ð	R	QQ.	S	Q.	Q.	g	ON	ND	5.2
		Toluene (na/l)	7.001	C.U.>	ND	R	QN N	8	E	B	R	12	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	4.06	9.55	10.4	1.3	R	- OZ	ΩZ	- PZ	P P	QZ	ON N	<del>S</del>	B	M	ON ON	30
<del></del>		Benzene		c.0.>	ND	2	<u>R</u>	B	B	8	S	1.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.51	8.51	47.5	48.7	7.0	N N	Ð	£	OZ	ON ON	Ą		g	S	S	ON ON	2.5
	TPH as	diesel			ND	;	1		\$	# # ##	1	1			:	1 1		; 1	1	ŧ	1		1 1	: 1	1	1	S	ł	1	!	1	!	!	:	:	ŀ		i i
	TPH as	gasoline	7600		ND	0.12	R	R	B	B	S	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	===	0.47	0.35	0.80	0.78	1	B	Ð	B	R	Q	£	£	QN	£	£	ND	0.14
		Date	Sample S	2-t-32	29-Dec-95	21-Aug-98	24-Nov-98	26-Feb-99	28-May-99	28-Jan-00	16-Jun-00	29-Sep-00	2-Feb-01	17-Dec-01	26-Mar-02	2-Jul-02	20-Sep-02	16-Dec-02	21-Mar-03	24-Jun-03	11-Sep-03	11-Mar-04	7-Jun-04	22-Oct-04	24-Jan-05	5-Oct-93	28-Dec-95	14-Apr-97	28-Jul-97	19-Nov-97	18-Feb-98	20-Aug-98	24-Nov-98	25-Feb-99	27-May-00	27-Jan-00	15-Jun-00	29-Sep-00
		Well	1 STATE	MW-9	MW-9	MW-9	MW-9	MW-9	MW-9	MW-9	MW-9	MW-9	MW-9	6-WM	MW-9	MW-9	MW-9	MM9	MW-9	MW-9	MW-9	MW-9	6-MM	MW-9	MW-9	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10





냁					_						1	T													Ī										7
Other EPA Test	Method 8260	Compounds	(l/grl)		****	*****	****	****	***	10.2 I	17.71	***	1		‡ ‡	25.4 B	Q.	8	2	other (1)	other (2)	Q	Q.	****	****	***	***	***	****	****	1.55 PCE	****	Ð	QN	***
	1,2-	Dichloroethane	(I/grl)	0.941	82.4	<100	<10	<10	<5.0	<5.0	<5.0	1.97	36		8.5 **	39.5	12 **	19.3	8.66	ND	ND	QN	< 20.0	1.76	<2.5	2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MTBE	(EPA Test	Method 8260)	(l/grl)	4.33	<10	<200	<b>~</b> 20	<5.0	<10	<10	<10	<2.0	1 1	1		6.5	ON	2.02	1.60	ON	Ð	ON	< 20.0	< 1.0	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
		Xylenes	(l/gn)	< 0.5	210	666	351	7	14.8	13.0	<5.0	3.75	> 0.6	2	£	£	Ð	0.91	£	541 mp	096	530	250	1.58	14.1	14.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
		Ethylbenzene	(µg/l)	< 0.5	37.8	<100	19.1	<2.5	8.79	<5.0	<5.0	<1.0	9.0 >	N N	QN	14.8	4.2	3.8	QN	513	590	640	110	4.34	2.5	3.60	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
		Toluene	(l/grl)	< 0.5	50.5	924	36.9	<2.5	<5.0	8.25	<5.0	1.52	< 0.5	R	R	B	B	1.0	R	442	140	220	260	0.61	<b>2.5</b>	19.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
		Benzene	(J/grl)	< 0.5	1,800	959	115	<2.5	122	424	150	20.0	< 0.5	2	<del>Q</del>	48.6	38	38	R	1,080	1,400	1,500.	280	24.6	7.40	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	TPH as	diesel	(Il/gm)	;	: 1	t	ì	1	-	1			1	R	1	1 1	:		:	t			-	:	1	1	1				ı	ŧ			2 (
	TPH as	gasoline	(mg/l)	< 0.05	7.1	18	0.6	<2.5	11	1.4	2.9	3.9	1 1		Q	99'0	0.64	1.4	2	14	15	18	8.7	1.0	2.4	2.8	0.36	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
		Date	Sampled	1-Feb-01	26-Mar-02	2-Iul-02	20-Sep-02	16-Dec-02	20-Mar-03	7-Jun-04	22-Oct-04	24-Jan-05	5-04-93	28-Dec-95	14-Apr-97	20-Aug-98	24-Nov-98	25-Feb-99	28-May-99	27-Jan-00	15-Jun-00	29-Sep-00	1-Feb-01	17-Dec-01	26-Mar-02	2-Jul-02	20-Sep-02	16-Dec-02	20-Mar-03	24-Jun-03	11-Sep-03	11-Mar-04	7-Jun-04	22-Oct-04	24-Jan-05
		Well	Number	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW.11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11



Table 2. Groundwater Analytical Results Since 1991 200 Morris Street Sebastopol, California

11771				veren	-			MTBE		Other EFA Lest
T47 - 13		TPH as	TPH as					(EPA Test	1,2-	Method 8260
Well	Date	gasoline	diesel	Benzene	Toluene	Ethylbenzene	Xylenes	Method 8260)	Dichloroethane	Compounds
Number	Sampled	(mg/l)	(mg/l)	(L/grl)	(L/grl)	(Lgd)	(µg/l)	(I/gr/I)	(l/grl)	(l/gµ)
MW-12	15-Apr-97	£		B	Q.	S	Ð	*	* Q	* *
MW-12	25-Nov-98	QN	1	B	<del>Q</del>	S	B	•	0.8 **	8
MW-12	27-May-99	QN	1	Q.	£	- R	ΝĐ	ON	Q	B
MW-12	27-Jan-00	1.2		119	OZ.	- Q	N D	B	QN.	ND
MW-12	15-Jun-00	2	1	6.9	B	- R	N N	R	Q	9.64 Be
MW-12	29-Sep-00	0.15	ŧ	36	B	GN	Q	R	Q	2
MW-12	1-Feb-01	41		4,400	58	100	95	< 250	< 250	OS
MW-13	28-Dec-95	OZ	QN	S	N N	QN.	QZ	- +	* QZ	1
MW-13	15-Apr-97		1	8	P.	Ð	ΩN	1	*2	
MW-13	25-Nov-98		1	B	R	R	QZ Q	B	*2	R
MW-13	27-May-99	QN	1	S	Ą	NO ON	ΩN	2	9	2
MW-13	27-Jan-00	S	;	QN	ΩN	QN	ND	Q	R	QN
MW-13	15-Jun-00	Ð		R	- ON	QN	B	Ð	R	QN
MW-13	29-Sep-00	0.13	1	1.9	8.4	2.4	6.3	QN	A	B
MW-13	1-Feb-01	< 0.05	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	B
N/TA/_16	22-0-4-04	II.		25.8	<2.5	40.7	143	<5.0	1	other (3)
MW-16	24-Jan-05	2.1		15.1	2.86	11.5	35.8	<5.0	15.5	****
MW-17	22-Oct-04	1.4	1	509	99.5	7.97	123	<5.0	<2.5	other (4)
MW-17	24-Jan-05	1.8		305	50.3	28.9	59.0	<10	<5.0	***
MW-18	22-Oct-04	16	1 2	2.830	1.840	2,050	2,720	<100	<50	other (5)
MW-18	24-Jan-05	25	3 \$	2,590	1,230	1,800	1,970	<100	57.4	***
MW-19	22-Oct-04	10		974	168	30.2	826	<10.0	80.0	other (6)
MW-19	24-Jan-05	16		2,410	1,030	228	1,090	<20	46.3	****
MW-20	22-Oct-04	I		1,350	1,700	1,250	4,460	<10.0	<5.0	other (7)
MW-20	24-Jan-05	29	1	1,840	1,970	1,450	4,560	<50	<25	***



Other EPA Test	Method 8260	Compounds	(l/grl)	# #	1.09 C	Ð	Q	2.23 PCE/1.09 TCE		2.85 PCE/1.41 TCE	# 1	44 45	***	***			1				QN	5.89 C	QN	2	Q.	20	2	S	***	****	***	***	***	***
	1,2-	Dichloroethane	(I/gul)	1	B	ND (2.8 PCE/1.4 TCE) **	.67TCE) **			8		< 0.5	< 0.5	< 0.5	4.0 **	12 **	2.9 **	0.5 **	*2	1.0 **	Ð	11	5.72	1.56	2		R	< 20	251	<b>2</b> 20	<100	<10	<10	<5.0
MTBE	(EPA Test	Method 8260)	(l/grl)	-	B	S	B	QN	QN.	QN	Q	< 0.50	< 1.0	< 1.0			* *			ND (EPA 8020/5)	ND	R	QN	Q	8	B	SP	< 20.0	106	<100	<200	85	<10	<10
		Xylenes	(µg/I)	S	Q	<u>Q</u>	QN	ON ON	S	ΩΩ	18	< 0.5	< 0.5	1.33	2.2	1.5	QZ	6.0	ND DN	ΩZ	ND DN	ND	R	<u>Q</u>	8	2	22	< 0.5	2,050	7,140	1,400	137	56	127
		Ethylbenzene	(l/grl)	B	B	R	Q	Ð	QN	QN	3.5	< 0.5	< 0.5	< 0.5	9,0	1.7	Q.	T.	Q.	R	Q.	GN	09.0	QQ	£	Ð	4.4	< 0.5	835	920	719	90.2	24.8	102
		Toluene	(l/gn)	R	OZ.	Ð	QN	QN	B	OZ.	9.2	< 0.5	< 0.5	1.54	2.3	2.7	0.8	1.3	B	PS.	S	OZ N	98.0	ON	Ð	£	17	1.8	2,370	12,900	245	11.3	65	226
		Benzene	(Lgd)	£	QN	S	QN	N	QZ	ON.	Ð	< 0.5	< 0.5	< 0.5	53	100	3.3	180	B	9.0	1,390	470	400	3.78	B	B	2.6	110	8,570	5,190	297	<10.0	38	448
	TPH as	diesel	(mg/l)	2	1	1	1 1		1	1: 1:		1		1	Œ	(E	1 1				:					-	I.	1	* -	1 +	†			-
	TPH as	gasoline	(mg/l)	2	0.00	R	R	QN	R	<u>R</u>	0.16	< 0.05	< 0.05	0.41	3.1	3.2	10	1.0	B	0.32	5.0	3.6	0.78	0.17	ND	Q	0.12	2.6	30	49	31	8.6	6.3	12
		Date	Sampled	29-Dec-95	21-Aug-98	25-Nov-98	26-Feb-99	28-Mav-99	27-Tan-00	16-Jun-00	29-Sep-00	2-Feb-01	17-Dec-01	26-Mar-02	9-Tan-9	12-Ian-96	15-Apr-97	28-Jul-97	18-Nov-97	18-Feb-98	20-Aug-98	25-Nov-98	25-Feb-99	27-May-99	27-Jan-00	15-Jun-00	29-Sep-00	1-Feb-01	17-Dec-01	26-Mar-02	2-Jul-02	20-Sep-02	16-Dec-02	20-Mar-03
		Well	Number	P4	P-4	P.4	P-4	P4	P.4	P-4	P-4	P-4	P-4	P-4	EX.1	EX-1	EX.1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	EX-1	欧-1	EX-1	EX-1



## Table 2. Groundwater Analytical Results Since 1991 200 Morris Street

Sebastopol, California

Note: Samples collected prior to 1995 were collected by Kleinfelder

Milligrams per liter which is equivalent to parts per million (ppm). Micrograms per liter which is equivalent to parts per billion (ppb)

Not detected at laboratory reporting limit. 11

 $\mu g/l$ 

2

Not analyzed.

Napthalene = 84.2  $\mu g/l$ ; n-propylbenzene = 65.0  $\mu g/l$ ; 1,3,5-trimethylbenzene = 103  $\mu g/l$ ; 1,2,4-trimethylbenzene = 340  $\mu g/l$ ; Napthalene 11 11 other (1)

and o-xylene =  $174 \mu g/1$ 

other (2)

other (3)

other (4)

Benzene =  $1940 \, \mu g/l$ ; Ethylbenzene =  $875 \, \mu g/l$ ; Napthalene =  $234 \, \mu g/l$ ; 1,2,4-trimethylbenzene =  $463 \, \mu g/l$ ; 11

and m,p-xylene =  $562 \mu g/1$ .

N-propylbenzene =  $6.19 \, \mu g/l$ ; isopropylbenzene =  $9.68 \, \mu g/l$ ; 1,2,3-trimethylbenzene =  $46.8 \, \mu g/l$ ; 11

,3,5-trimethylbenzene = 12.8  $\mu$ g/1; and sec-butylbenzene = 4.61  $\mu$ g/1.

N-propylbenzene =  $3.13 \,\mu g/1$ ; 1,2,3-trimethylbenzene =  $23.0 \,\mu g/1$ ; and 1,3,5-trimethylbenzene =  $21.5 \,\mu g/1$ . 11 11

N-propylbenzene = 213  $\mu g/l$ ; isopropylbenzene = 70.3  $\mu g/l$ ; 1,3,5-tirmethylbenzene = 360  $\mu g/l$ ; naphthalene = 341  $\mu g/l$ ; other (5)

Naphthalene = 12.3  $\mu$ g/1; n-propylbenzene = 8.01  $\mu$ g/1; 1,2,3-trimethylbenzene = 92.1  $\mu$ g/1; 1,3,5-trimethylbenzene = 69.0  $\mu$ g/1. and 1,2,3-trichlorobenzene = 557 µg/l.

Napthalene = 216  $\mu g/l$ ; n-propylbenzene = 248  $\mu g/l$ ; 1,3,5-trimethylbenzene = 448  $\mu g/l$ ; 1,2,3-trimethylbenzene = 1,350  $\mu g/l$ ; 11 11 other (7) other (6)

n-butylbenzene =  $60.5 \,\mu g/l$ , isopropylbenzene =  $73.5 \,\mu g/l$ ; and sec-butylbenzene =  $13.1 \,\mu g/l$ .

m,p-xylene.

**Bromodichloromethane**. 11 11

3enzene by EPA Test Method 8260B. 

Di-isopropyl ether.

Foluene by EPA Test Method 8260B. sopropylbenzene. 11 11 11 11 11 11

m,p-Xylene by EPA Test Method 8260B.

Trichloroethene.

Fetrachloroethene.

Analyses performed by EPA Test Method  $8020/(\text{reporting limit for MTBE in } \mu\text{g}/1)$ . - 11 EPA 8020/E

Methyl tertiary butyl ether.

\*

Analyzed using EPA Test Method 8010, all other analytes were not detected.

Chromatographic peak array does not match commercial diesel standard, probable source is gasoline.

Analyzed for other petroleum oxygenates and lead scavengers not detected at laboratory reporting limits.



## Table 3. Product Removal From Well MW-15

## 200 Morris Street Sebastopol, California

		* *	ate Amount
Date	Initial Product	Water/	Product
Bailed	Thickness (feet)	Remove	d (gallons)
		Water	Product
6/11/2004	8.59	15	10
7/2/2004	10.66	5	10
7/12/2004	9.63	9	4
7/13/2004	5.28	. 7	3
7/22/2004	6.00	4	6
7/23/2004	4.28	5.5	4.5
7/26/2004	4.53	5	5
7/30/2004	4.40	5	5
8/3/2004	4.13	5	5
8/6/2004	3.59	6	4
9/5/2004	5.90	5	4
9/22/2004	4.60	7	3
10/18/2004	7.46	7.5	2.5
10/25/2004	3.05	<i>7</i> .5	2.5
11/5/2004	3.40	9	1
12/3/2004	0.35*	5	5
12/16/2004	2.19	3	2
	Total	110.5	76.5

 $<sup>\</sup>mbox{*}$  initial bailer contained approximately 2.5 feet of product.



# TABLE 4. ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM BORINGS SINCE 1995 200 Morris Street Sebastopol, California

with Depth         Si           Collected (feet bgs)         Si           Well Borings           MW-12-13.5         111/		TPH as	Market Programme		Ethyl-		(EPA Test	1,2-Dichloro	Oxygenates and
	Date Sampled	gasoline (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	benzene (µg/kg)	Xylenes (μg/kg)	Method 8260) (μg/kg)	ethane (µg/kg)	Lead Scavengers (µg/kg)
	-			The state of the s					
	11/14/1995	< 1.0	<5.0	<5.0	<5.0	<5.0	a	<5.0	er -t-
MW-13-14.5	11/14/1995	< 1.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	
MW-15-5   2/:	2/23/2004	008'9	<12,500	125,000	88,200	420,000	<12,500	<12,500	ND
10	2/23/2004	2,100	<10,000	21,700	16,300	82,000	<10,000	<10,000	ND
MW-15-20 2/:	2/23/2004	2,400	<5,000	43,200	26,200	132,000	<5,000	<5,000	ON
MW-15-25 2/:	2/23/2004	400	<500	1,000	702	3,700	<500	<500	ND ND
	2/23/2004	1.1	54.9	108	26.6	105	<25	<25	QQ
MW-16-10 8/	8/23/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
	8/23/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-16-25 8/:	8/23/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	AN	NA
MW-17-20   9/:	9/21/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
	9/21/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-17-30 9/:	9/21/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-17-35 9/:	9/21/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-18-20   9/	9/22/2004	<1.0	<5.0	<5.0	<5.0	8.93	<5.0	NA	ŊĀ
MW-18-25 9/:	9/22/2004	3.6	<25	<25	35.2	230	<25	NA	NA
MW-18-30 9/:	9/22/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-18-35   9/:	9/22/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-19-20 10,	10/1/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-19-25 10,	10/1/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-19-30 10,	10/1/2004	<1.0	<5.0	<5.0	<5.0	€5.0	<5.0	NA	NA
MW-19-35 10,	10/1/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
MW-20-20   10,	10/4/2004	<1.0	<5.0	7.14	7.93	42.1	<5.0	NA	NA
MW-20-25 10,	10/4/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA
	10/4/2004	<1.0	<5.0	<5.0	€5.0	<5.0	<5.0	NA	NA
MW-20-35 10,	10/4/2004	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	NA



# TABLE 4. ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM BORINGS SINCE 1995 200 Morris Street Sebastopol, California

Sample Number		TPH as			Ethyl.	MTBE	(EPA Test	Other Petroleum 1,2-Dichloro	Oxygenates and
with Depth	Date	gasoline	Benzene	Toluene	benzene (110/kg)	Xylenes (mo/ko)	Method 8260)	ethane (ug/kg)	Lead Scavengers (ug/kg)
Rorings	Sampies	(Bargini)	(Herrey	d d	, C	, D. D. L.	Ò		
H1.11	1/18/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN
H1-16	1/18/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN
1176H	1/18/2001	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN.
H2-16	1/18/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN
7-7-7	1/22/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	B
H3-15.5	1/22/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ON
142.5	1/19/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ON
H4-6.5	1/19/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	S
H4-10.5	1/19/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	B
	1/31/2001	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN
H5-15.5	1/31/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	B
H6-10.5	1/17/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	GN
H6-15.5	1/17/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN .
H7-11	2/1/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8
H7-16	2/1/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
H8-11	2/2/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	S
H8-16	2/2/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	B
H9-11	2/2/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	S
H9-16	2/2/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<u>R</u>
H10-11	1/22/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	S
H10-16	1/22/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	QN



# TABLE 4. ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM BORINGS SINCE 1995

Sebastopol, California 200 Morris Street

						MTBE		Other Petroleum	
Sample Number with Denth	Date	TPH as	Benzene	Toluene	Ethyl- benzene	Xylenes	(EPA Test Method 8260)	1,2-Dichloro ethane	Oxygenates and Lead Scavengers
Collected (feet bgs)	Sampled	(mg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(μg/kg)
H11-10	3/25/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
H12-15	3/28/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	SQ.
H13-15	3/27/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	SD.
H15-15	3/27/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
H17-15	3/25/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
H18-10	3/26/2002	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
HA1-12.5	1/19/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	$7.30^{1}$ , $6.01^{2.3}$
HA2-10.5	1/19/2001	< 1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ON

mg/kg = Milligrams per kilogram

µg/kg = Micrograms per kilogram

ND = Not detected at laboratory reporting limit

bgs = Below ground surface

-- = Not analyzed

< = Not reported at given laboratory reporting limit

 $^2$  = 1,2,3-Trichlorobenzene  $^3$  = Also analyzed for full list of EPA Test Method 8260 compounds, only those detected are listed





bber         Date         Top of PVC         Fluid/Air         Product/Water         Groundwater         Product/Water         Groundwater         Interface         Uncorrected         Top of PVC         Fluid/Air         Product/Water         Groundwater         Interface         Uncorrected         Incorrected         Incorrected				Depth to	Depth to	Elevation of	Floating	Correction for	
gr         Measured         Ervation         Interface         Interface         Uncorrected         Thickness           14-Apr-97         68.63         11.06         14.35         54.28         3.29           14-Apr-97         68.23         10.41         10.41         55.95         0.00           14-Apr-97         68.45         11.50         14.36         56.95         0.00           14-Apr-97         68.47         11.50         14.96         56.81         0.00           14-Apr-97         68.77         11.40         1.1.3         56.34         0.00           14-Apr-97         68.27         11.41         56.81         0.00           14-Apr-97         68.27         11.26         12.56         55.81         0.00           14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         68.63         10.80         10.80         56.81         0.00           14-Apr-97         67.48         10.80         10.80         55.51         0.00           14-Apr-97         67.83         16.20         10.00         14.40         52.30         0.00           28-Jul-97         68.63         16.09	Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
(Feet, MSL)         (feet)         (f	Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
14-Apr-97         68.63         11.06         14.35         54.28         3.29           14-Apr-97         68.23         10.41         10.41         57.82         0.00           14-Apr-97         68.45         11.50         11.50         56.95         0.00           14-Apr-97         68.45         11.50         11.50         56.34         0.00           14-Apr-97         68.47         11.68         12.13         56.34         0.45           14-Apr-97         68.37         11.41         11.41         56.81         0.00           14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         67.83         11.28         11.28         56.55         0.00           14-Apr-97         67.48         10.80         10.80         56.65         0.00           14-Apr-97         67.66         11.05         11.05         55.81         0.00           14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         68.63         16.60         12.60          0.00           28-Iul-97         68.63         16.10         16.91         51.56 <th></th> <th></th> <th>(Feet MSL)</th> <th>(teet)</th> <th>(feet)</th> <th>(feet, MSL)</th> <th>(feet)</th> <th>(feet)</th> <th>(feet, MSL)</th>			(Feet MSL)	(teet)	(feet)	(feet, MSL)	(feet)	(feet)	(feet, MSL)
14-Apr-97 $68.23$ $10.41$ $10.41$ $10.41$ $57.82$ $0.00$ 14-Apr-97 $68.45$ $11.50$ $14.96$ $14.96$ $56.95$ $0.00$ 14-Apr-97 $68.45$ $11.50$ $14.96$ $14.96$ $56.34$ $0.00$ 14-Apr-97 $68.47$ $11.68$ $12.13$ $56.34$ $0.45$ 14-Apr-97 $68.25$ $10.20$ $11.41$ $11.41$ $56.31$ $0.00$ 14-Apr-97 $68.37$ $11.26$ $12.56$ $12.56$ $10.80$ $56.58$ $0.00$ 14-Apr-97 $67.66$ $11.05$ $11.05$ $11.05$ $0.00$ $0.00$ 14-Apr-97 $67.66$ $11.05$ $11.05$ $0.00$ $0.00$ $0.00$ 14-Apr-97 $68.63$ $16.20$ $16.43$ $52.20$ $0.00$ 28-Iul-97 $68.63$ $16.09$ $16.09$ $16.09$ $52.14$ $0.00$ 28-Iul-97 $68.63$ $16.10$ $16.09$ <t< td=""><td>MW-1</td><td>14-Apr-97</td><td>68.63</td><td>11.06</td><td>14,35</td><td>54.28</td><td>3.29</td><td>2.50</td><td>56.78</td></t<>	MW-1	14-Apr-97	68.63	11.06	14,35	54.28	3.29	2.50	56.78
14-Apr-97         68.45         11.50         11.50         56.95         0.00           14-Apr-97         71.77         14.96         14.96         56.81         0.00           14-Apr-97         71.77         14.96         14.96         56.81         0.00           14-Apr-97         68.47         11.68         12.13         56.34         0.45           14-Apr-97         68.22         11.41         11.41         56.81         0.00           14-Apr-97         68.37         11.26         12.56         55.81         0.00           14-Apr-97         67.83         11.28         11.05         0.00           14-Apr-97         67.84         10.80         10.80         56.65         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         67.66         11.05         11.60         0.00         0.00           28-Iul-97         68.63         16.09         16.09         52.14         0.00           28-Iul-97         68.47         16.10         16.43         52.30         0.00           28-Iul-97         68.47         16.10         16.91         51.56         0.00	MW-2	14-Apr-97	68.23	10.41	10,41	57.82	00.00	00'0	57.82
14-Apr-97         71.77         14.96         14.96         56.81         0.00           14-Apr-97         68.47         11.68         12.13         56.34         0.45           14-Apr-97         68.47         11.68         12.13         56.34         0.45           14-Apr-97         68.25         11.41         56.81         0.00           14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         68.37         11.28         11.28         56.65         0.00           14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         68.63         16.20         12.60          0.00           28-Jul-97         68.63         16.09         16.43         52.30         0.00           28-Jul-97         68.83         16.61         16.43         51.56         0.00           28-Jul-97         68.83         16.61         16.51         51.56         0.00	MW-3	14-Apr-97	68.45	11.50	11.50	56.95	0.00	0.00	56.95
14-Apr.97         68.47         11.68         12.13         56.34         0.45           14-Apr.97         68.75         inaccessible             14-Apr.97         68.75         inaccessible             14-Apr.97         68.37         12.56         12.56         55.81         0.00           14-Apr.97         68.837         12.56         12.56         55.81         0.00           14-Apr.97         67.88         11.28         11.28         56.55         0.00           14-Apr.97         67.66         11.05         11.05         56.61         0.00           14-Apr.97         68.63         16.20         12.60          0.00           28-Jul.97         68.63         16.20         16.09         52.14         0.00           28-Jul.97         68.63         16.09         16.09         52.30         0.00           28-Jul.97         68.47         16.10         16.47         51.56         0.00           28-Jul.97         68.63         16.50         17.23         17.23         17.23         18.0           18-Nov.97         68.63         16.90         17.23         18.52         49.95	MW-4	14-Apr-97	71.77	14.96	14.96	56.81	0.00	0.00	56.81
14-Apr-97         68.75         inaccessible              14-Apr-97         68.22         11.41         14.4         56.81         0.00           14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         67.83         11.28         11.28         56.65         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         68.63         16.09         15.60         0.00         0.00           28-Jul-97         68.63         16.09         16.09         52.14         0.00           28-Jul-97         68.23         16.09         16.91         51.56         0.00           28-Jul-97         68.23         16.10         16.91         51.56         0.00           28-Jul-97         68.37         16.61         16.91         51.56         0.00           28-Jul-97         68.37         16.67         16.61         51.56	MW-5	14-Apr-97	68.47	11.68	12.13	56.34	0.45	0.34	26.68
14-Apr-97         68.22         11.41         11.41         56.81         0.00           14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         67.83         11.28         12.56         55.81         0.00           14-Apr-97         67.86         11.08         10.80         56.68         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         68.63         16.09         16.09         16.09         0.00           28-Iul-97         68.63         16.09         16.09         52.14         0.00           28-Iul-97         68.23         16.09         16.09         52.30         0.00           28-Iul-97         68.47         16.10         16.91         51.56         0.00           28-Iul-97         68.47         16.11         16.91         51.56         0.00           28-Iul-97         68.47         16.51         16.91         51.56         0.00           28-Iul-97         68.63         16.67         16.51         51.56         0.00           18-Nov-97         68.63         16.90         17.10         51.53 <td>MW-6</td> <td>14-Apr-97</td> <td>68.75</td> <td>inaccessible</td> <td></td> <td>9</td> <td>•</td> <td>1 1</td> <td></td>	MW-6	14-Apr-97	68.75	inaccessible		9	•	1 1	
14-Apr-97         68.37         12.56         12.56         55.81         0.00           14-Apr-97         67.83         11.28         11.28         6.55         0.00           14-Apr-97         67.48         10.80         10.80         56.68         0.00           14-Apr-97         67.66         11.05         11.05         6.66         0.00           14-Apr-97         67.66         11.05         11.05         0.00         0.00           14-Apr-97         not surveyed         12.60         12.60          0.00           28-Jul-97         68.63         16.09         16.09         52.14         0.00           28-Jul-97         68.47         16.11         16.91         51.56         0.00           28-Jul-97         68.37         16.61         16.61         51.56         0.00           18-Nov-97         68.63         16.90         17.10         51.56         0.00           18-Nov-97         68.47         17.23         12.67         50.09         0.00           18-Nov-97         68.47         17.23         12.60         0.00         0.00           18-Nov-97         68.47         17.23         18.02         0.00 <td>MW-7</td> <td>14-Apr-97</td> <td>68.22</td> <td>11.41</td> <td>11.41</td> <td>56.81</td> <td>0.00</td> <td>0.00</td> <td>56.81</td>	MW-7	14-Apr-97	68.22	11.41	11.41	56.81	0.00	0.00	56.81
14-Apr-97 $67.83$ $11.28$ $11.28$ $11.28$ $11.28$ $0.00$ $14-Apr-97$ $67.66$ $11.05$ $10.80$ $56.68$ $0.00$ $14-Apr-97$ $67.66$ $11.05$ $11.05$ $56.61$ $0.00$ $14-Apr-97$ $68.63$ $16.20$ $12.60$ $$ $0.00$ $28-Iul-97$ $68.23$ $16.09$ $16.09$ $52.14$ $0.00$ $28-Iul-97$ $68.47$ $16.10$ $16.91$ $51.56$ $0.00$ $28-Iul-97$ $68.37$ $16.61$ $16.91$ $51.76$ $0.00$ $28-Iul-97$ $68.37$ $16.61$ $16.91$ $51.76$ $0.00$ $28-Iul-97$ $68.37$ $16.61$ $17.23$ $17.23$ $17.25$ $0.00$ $18-Nov-97$ $68.63$ $16.67$ $16.67$ $16.67$ $16.67$ $0.00$ $18-Nov-97$ $68.47$ $17.23$ $18.02$ $0.00$ $0.00$ $18-Nov-97$ $0.00$ $0.00$	MW-10	14-Apr-97	68.37	12.56	12.56	55.81	000	0.00	55.81
14-Apr-97         67.48         10.80         10.80         56.68         0.00           14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         not surveyed         12.60         12.60          0.00           28-Jul-97         68.63         16.20         16.43         52.20         0.23           28-Jul-97         68.23         16.09         16.09         52.14         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.47         16.61         16.61         51.56         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           28-Jul-97         68.63         16.90         17.10         51.53         0.00           28-Jul-97         68.63         16.61         16.61         51.56         0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.00           18-Nov-97         68.47         17.23         18.52         49.95         0.00           18-Nov-97         68.47         17.23         18.02 <td< td=""><td>MW-11</td><td>14-Apr-97</td><td>67.83</td><td>11.28</td><td>11.28</td><td>56.55</td><td>0.00</td><td>0.00</td><td>56.55</td></td<>	MW-11	14-Apr-97	67.83	11.28	11.28	56.55	0.00	0.00	56.55
14-Apr-97         67.66         11.05         11.05         56.61         0.00           14-Apr-97         not surveyed         12.60          0.00           28-Jul-97         68.63         16.09         16.09         52.14         0.00           28-Jul-97         68.23         16.09         16.09         52.14         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.47         16.61         16.61         51.56         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.00           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         17.65         50.35         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.02         0.00         0.00           18-Nov-97         68.47         17.23         18.02         0.00         0	MW-12	14-Apr-97	67.48	10.80	10.80	56.68	0.00	0.00	56.68
14-Apr-97         not surveyed         12.60          0.00           28-Jul-97         68.63         16.20         16.43         52.20         0.23           28-Jul-97         68.23         16.09         16.09         52.14         0.00           28-Jul-97         71.77         19.47         16.91         51.56         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.00           28-Jul-97         not surveyed         17.23         17.23         -         0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         17.23         12.56         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.52         49.95         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-	MW-13	14-Apr-97	67.66	11.05	11.05	56.61	0.00	0.00	56.61
28-Jul-97         68.63         16.20         16.43         52.20         0.23           28-Jul-97         68.23         16.09         16.09         52.14         0.00           28-Jul-97         77.77         19.47         19.47         52.30         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.37         16.61         16.61         51.76         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.56         0.00           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.52         49.95         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-97<	EX-1	14-Apr-97	not surveyed	12.60	12.60		0.00	7 9	
28-Jul-97         68.23         16.09         16.09         52.14         0.00           28-Jul-97         71.77         19.47         19.47         52.30         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.37         16.61         16.91         51.56         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.56         0.00           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.02         50.35         0.00           18-Nov-97         68.47         17.23         18.02         50.35         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-97         68.37         18.02         0.00         0.00           18-Nov-97<	MW-1	28-Iul-97	68.63	16.20	16,43	52.20	0.23	0.17	52.37
28-Jul-97         71.77         19.47         19.47         52.30         0.00           28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.37         16.61         16.61         51.76         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.52         49.95         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         18-Nov-97         18.02         0.00         0.00	MW-2	28-Tul-97	68.23	16.09	16.09	52.14	0.00	0.00	52.14
28-Jul-97         68.47         16.10         16.91         51.56         0.81           28-Jul-97         68.37         16.61         16.61         51.76         0.00           28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.47         17.23         18.02         50.35         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65          0.00	MW-4	28-Jul-97	71.77	19.47	19.47	52.30	0.00	0.00	52.30
28-Jul-97         68.37         16.61         16.61         51.76         0.00           28-Jul-97         not surveyed         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         71.77         20.89         20.89         50.88         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         50.35         0.00         18.Nov-9           18-Nov-97         not surveyed         17.65          0.00	MW-5	28-Jul-97	68.47	16.10	16.91	51.56	0.81	0.62	52.18
28-Jul-97         not surveyed         17.23         17.23          0.00           18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         51.56         0.00           18-Nov-97         71.77         20.89         20.89         50.88         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65          0.00	MW-10	28-Jul-97	68.37	16.61	16.61	51.76	0.00	0.00	51.76
18-Nov-97         68.63         16.90         17.10         51.53         0.20           18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         71.77         20.89         20.89         50.88         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65          0.00	EX-1	28-Jul-97	not surveyed	17.23	17.23		0.00	- 1	1
18-Nov-97         68.23         16.67         16.67         51.56         0.00           18-Nov-97         71.77         20.89         20.89         50.88         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65         17.65          0.00	MW-1	18-Nov-97	68.63	16.90	17.10	51.53	0.20	0.15	51.68
18-Nov-97         71.77         20.89         20.89         50.88         0.00           18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65         17.65          0.00	MW-2	18-Nov-97	68.23	16.67	16.67	51.56	0.00	0.00	51.56
18-Nov-97         68.47         17.23         18.52         49.95         1.29           18-Nov-97         68.37         18.02         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65         -         0.00	MW-4	18-Nov-97	71.77	20.89	20.89	50.88	00.00	0.00	50.88
18-Nov-97         68.37         18.02         18.02         50.35         0.00           18-Nov-97         not surveyed         17.65         -         0.00	MW-5	18-Nov-97	68.47	17.23	18.52	49.95	1.29	0.98	50.93
18-Nov-97 not surveyed 17.65 17.65	MW-10	18-Nov-97	68.37	18.02	18.02	50.35	0.00	0.00	50.35
	EX-1	18-Nov-97	not surveyed	17.65	17.65	•	0.00	k t	1



			Danth to	Danth to	Flevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(teet)	(feet)	(feet, MSL)	(teet)	(feet)	(feet, MSL)
MW-1	17-Feb-98	68.63	11.98	13,16	55.47	1.18	06:0	56.37
MW-2	17-Feb-98	68.23	12.84	12.84	55.39	0.00	0.00	55.39
MW-4	17-Feb-98	71.77	15.45	15.45	56.32	0.00	0.00	56.32
MW-5	17-Feb-98	68.47	12.17	12.17	56.30	0.00	0.00	56.30
MW-10	17-Feb-98	68.37	12.06	12.06	56.31	0.00	0.00	56.31
MW-11	17-Feb-98	67.83	13.92	13.92	53.91	0.00	0.00	53.91
MW-12	17-Feb-98	67.48	12.33	12.33	55.15	0.00	0.00	55.15
MW-13	17-Feb-98	67.66	12.17	12.17	55.49	0.00	0.00	55.49
EX-1	17-Feb-98	not surveyed	13.00	13.00		0.00	1	
MW-1	20-Aug-98	68.63	12.92	14.14	54.49	1.22	0.93	55.42
MW-2	20-A119-98	68.23	10.24	10.24	57.99	0.00	0.00	57.99
NIW-4	20-A119-98	71.77	16.35	16.35	55.42	0.00	0.00	55.42
P-4	20-Aug-98	69.30	13.16	13.16	56.14	0.00	0.00	56.14
MW-5	20-Aug-98	68.47	13.05	13.85	54.62	08'0	0,61	55.23
MW-8	20-Aug-98	68.22	13.48	13.48	54.74	0.00	0.00	54.74
6-MM	20-Aug-98	70.08	14.11	14.11	55.97	0.00	0.00	55.97
MW-10	20-Aug-98	68.37	13.40	13.40	54.97	0.00	0.00	54.97
MW-11	20-Aug-98	67.83	13.01	13.01	54.82	0.00	0.00	54.82
MW-12	20-Aug-98	67.48	12.56	12.56	54.92	0.00	0.00	54.92
MW-13	20-Aug-98	67.66	12.91	12.91	54.75	0.00	0.00	54.75
FX-1	20-A119-98	69.37	14.13	14.13	55.24	0.00	0.00	55.24



			Denth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		Feet, MSL)	(feet)	(feet)	(feet, MSL)	(feet)	(feet)	(feet, MSL)
MW-1 (1)	24-Nov-98	68.57	12.80	14.30	54.27	1.50	1.14	55.41
MW-2 (1)	24-Nov-98	68.20	11.05	11.05	57.15	0.00	0.00	57.15
MW-4	24-Nov-98	71.77	16.36	16.36	55.41	0.00	0.00	55.41
P-4 (1)	24-Nov-98	69.30	13.42	13.42	55.88	0.00	0.00	55.88
MW-5 (1)	24-Nov-98	68.70	13.00	13.69	55.01	69:0	0.52	55.53
MW-8 (1)	24-Nov-98	68.75	13.36	13,36	55.39	0.00	0.00	55.39
MW-9 (1)	24-Nov-98	70.08	14.35	14.35	55.73	0.00	0.00	55.73
MW-10 (1)	24-Nov-98	68.37	13.42	13.42	54.95	0.00	0.00	54.95
MW-11 (1)	24-Nov-98	67.83	12.90	12.90	54.93	0.00	0.00	54.93
MW-12	24-Nov-98	67.48	12.55	12.55	54,93	0.00	0.00	54.93
MW-13	24-Nov-98	67.66	12.86	12.86	54.80	0.00	0.00	54.80
EX-1	24-Nov-98	69.37	14.22	14.22	55.15	0.00	0.00	55.15
NATA7_1 (1)	25_Heb_99	68.57	9.83	13.86	54.71	4.03	3.06	57.77
MW-2 (1)	25-Feb-99	68.20	7.82	7.82	60.38	0.00	0.00	60.38
MW-4	25-Feb-99	71.77	12.50	12.50	59.27	0.00	0.00	59.27
P-4 (1)	25-Feb-99	69.30	9.59	9.59	59.71	0.00	0.00	59.71
MW-5 (1)	25-Feb-99	68.70	9.27	9.54	59,16	0.27	0.21	59.37
MW-8 (1)	25-Feb-99	68.75	9.36	9.36	59.39	0.00	0.00	59.39
MW-9 (1)	25-Feb-99	70.08	10.47	10.47	59.61	0.00	0.00	59.61
MW-10 (1)	25-Feb-99	68.37	9.29	9.29	59.08	0.00	0.00	59.08
MW-11 (1)	25-Feb-99	67.83	8.80	8.80	59.03	0.00	0.00	59.03
MW-12	25-Feb-99	67.48	8.41	8.41	59.07	0.00	0.00	20.65
MW-13	25-Feb-99	67.66	8.65	8.65	59.01	0.00	0.00	59.01
MW-14 (1)	25-Feb-99	68.77	8.65	10.54	58.23	1.89	1.44	59.67
EX-1	25-Feb-99	69.37	10.15	10.15	59.22	0.00	0.00	59.22



			Depth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(feet)	(feet, MSL)	(teet)	(teet)	(feet, MSL)
MW-1 (1)	28-Mav-99	68.57	11.50	14.36	54.21	2.86	2.17	56.38
MW-2 (1)	27-May-99	68.20	11.14	11.14	57.06	0.00	0.00	57.06
MW-4	28-Mav-99	71.77	15.41	15.41	56.36	0.00	0.00	56.36
P-4 (1)	27-May-99	69.30	11.95	11.95	57.35	0.00	0.00	57.35
IW-5(1)	28-May-99	68.70	12.23	12.69	56.01	0.46	0.35	56.36
MW-8 (1)	27-May-99	68.75	12.96	12.96	55.79	0.00	0.00	55.79
MW-9 (1)	27-Mav-99	70.08	13.02	13.02	57.06	0.00	0.00	57.06
MW-10 (1)	27-Mav-99	68.37	12.58	12.58	55.79	0.00	0.00	55.79
MW-11 (1)	27-May-99	67.83	12.35	12.35	55.48	0.00	0.00	55.48
MW-12	27-May-99	67.48	11.74	11.74	55.74	00.00	0.00	55.74
MW-13	27-May-99	67.66	12.12	12.12	55.54	0.00	0.00	55.54
MW-14 (1)	28-May-99	68.77	11.34	14.04	54.73	2.70	2.05	56.78
EX-1	27-May-99	69.37	13.21	13.21	56.16	0.00	0.00	56.16
MW-1 (1)	28-Jan-00	68.57	15.87	15.87	52.70	0.00	0.00	52.70
MW-2 (1)	27-Tan-00	68.20	14.33	14.33	53.87	00:00	0.00	53.87
MW-4	27-Jan-00	71.77	19.19	19.19	52.58	0.00	00'0	52.58
P-4(1)	27-Jan-00	69.30	15.50	15.50	53.80	0.00	0.00	53.80
MW-5 (1)	28-Jan-00	68.70	15.98	15.98	52.72	0.00	0.00	52.72
MW-8 (1)	27-Jan-00	68.75	15.91	15.91	52.84	0.00	0.00	52.84
MW-9 (1)	27-Jan-00	70.08	16.45	16.45	53.63	0.00	0.00	53.63
MW-10(1)	27-lan-00	68.37	16.32	16.32	52.05	0.00	0.00	52.05
MW-11 (1)	27-Jan-00	67.83	15.82	15.82	52.01	0.00	0.00	52.01
MW-12	27-Jan-00	67.48	15.55	15.55	51.93	0.00	0.00	51.93
MW-13	27-Jan-00	67.66	15.88	15.88	51.78	0.00	0.00	51.78
MW-14 (1)	28-Jan-00	68.77	15.50	16.35	52.42	0.85	0.65	53.07
EX-1	27-Jan-00	69.37	16.99	16.99	52.38	0.00	0.00	52.38



			Depth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(feet)	(feet, MSL)	(feet)	(feet)	(feet, MSL)
MW-1 (1)	15-Jun-00	68.57	14.82	14.90	53.67	0.08	90:0	53,73
	15-Jun-00	68.20	14.64	14.64	53.56	0.00	0.00	53.56
MW-4	15-Jun-00	71.77	18.04	18.04	53.73	0.00	0.00	53.73
P-4 (1)	15-Jun-00	69.30	14.50	14.50	54.80	0.00	0.00	54.80
MW-5 (1)	15-Jun-00	68.70	14.95	15.00	53.70	0.05	0.04	53.74
MW-8 (1)	15-Jun-00	68.75	15.15	15.15	53.60	0.00	0.00	53.60
MW-9 (1)	15-Jun-00	70.08	15.56	15.56	54.52	0.00	0.00	54.52
MW-10(1)	15-Jun-00	68.37	15.28	15.28	53.09	0.00	0.00	53.09
MW-11 (1)	15-Jun-00	67.83	14.90	14.90	52.93	0.00	0.00	52.93
MW-12	15-Jun-00	67.48	14.45	14.45	53.03	0.00	0.00	53.03
MW-13	15-Jun-00	99'29	14.81	14.81	52.85	0.00	0.00	52.85
MW-14 (1)	15-Jun-00	68.77	14.49	15.15	53.62	99:0	0.50	54.12
EX-1	15-Jun-00	26.69	15.87	15.87	53.50	0.00	0.00	53.50
MW-1 (1)	29-Sep-00	68.57	16.43	17.64	50.93	1.21	0.92	51.85
MW-2 (1)	29-Sep-00	68.20	18.34	18.34	49.86	0.00	0.00	49.86
MW-4	29-Sep-00	71.77	21.74	21.74	50.03	0.00	0.00	50.03
P-4 (1)	29-Sep-00	69.30	18.14	18.14	51.16	0.00	0.00	51.16
MW-5 (1)	29-Sep-00	68.70	18.36	18.93	49.77	0.57	0.43	50.20
MW-8 (1)	29-Sep-00	68.75	18.37	18.37	50.38	0.00	0.00	50.38
MW-9 (1)	29-Sep-00	70.08	18.80	18.80	51.28	0.00	0.00	51.28
MW-10 (1)	29-Sep-00	68.37	19.01	19.01	49.36	0.00	0.00	49.36
MW-11 (1)	29-Sep-00	67.83	18.49	18,49	49.34	0.00	0.00	49.34
MW-12	29-Sep-00	67.48	18.19	18.19	49.29	0.00	0.00	49.29
MW-13	29-Sep-00	99:29	18.53	18.53	49.13	0.00	0.00	49.13
MW-14 (1)	29-Sep-00	22.89	18.11	19.05	49.72	0.94	0.71	50.43
EX-1	29-Sep-00	69.37	19.65	19.65	49.72	0.00	0.00	49.72



			Depth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(feet)	(feet, MSL)	(teet)	(teet)	(feet, MSL)
MW-1 (1)	1-Feb-01	68.57	17.51	18.16	50.41	0.65	0.49	50.90
MW-2 (1)	1-Feb-01	68.20	12.16	12.16	56.04	0.00	0.00	56.04
MW-4	1-Feb-01	71.77	20.96	20.96	50.81	0.00	0.00	50.81
P-4 (1)	1-Feb-01	69.30	18.60	18.60	50.70	0.00	0.00	50.70
MW-5 (1)	1-Feb-01	68.70	17.69	17.79	50.91	0.10	0.08	50.99
MW-8 (1)	1-Feb-01	68.75	17.47	17.47	51.28	0.00	0.00	51.28
MW-9 (1)	1-Feb-01	70.08	18.19	18.19	51.89	0.00	0.00	51.89
MW-10 (1)	1-Feb-01	68.37	18.02	18.02	50.35	0.00	0.00	50.35
MW-11 (1)	1-Feb-01	67.83	17.41	17.41	50.42	0.00	0.00	50.42
MW-12	1-Feb-01	67.48	17.15	17.15	50.33	0.00	0.00	50.33
MW-13	1-Feb-01	99.29	17.43	17.43	50.23	0.00	0.00	50.23
MW-14 (1)	2-Feb-01	68.77	15.83	16.63	52.14	0.80	0,61	52.75
EX-1	1-Feb-01	69.37	18.76	18.76	50.61	0.00	0.00	50.61
MAN. 1 (1)	17-Dec-01	68.57	22.63	23.75	44.82	1.12	0.85	45.67
MW-2 (1)	17-Dec-01	68.20	23.75	23.75	44.45	0.00	0.00	44.45
MW-4	17-Dec-01	71.77	D <sub>1</sub>	Dry				
P-4 (1)	17-Dec-01	69.30	23.48	23.48	45.82	0.00	0.00	45.82
MW-5 (1)	17-Dec-01	68.70	23.00	24.38	44.32	1.38	1.05	45.37
MW-8 (1)	17-Dec-01	68.75	23.67	23.67	45.08	0.00	0.00	45.08
MW-9 (1)	17-Dec-01	70.08	24.15	24.15	45.93	0.00	0.00	45.93
MW-10(1)	17-Dec-01	68.37	24.62	24.62	43.75	0.00	0.00	43.75
MW-11 (1)	17-Dec-01	67.83	23.89	23.89	43.94	0.00	0.00	43.94
MW-12	17-Dec-01	67.48	Dry	Dry				
MW-13	17-Dec-01	99'29	24.05	24.05	43.61	0.00	0.00	43.61
MW-14 (1)	17-Dec-01	68.77	NA	NA				
EX-1	17-Dec-01	69.37	25.17	25.17	44.20	0.00	0.00	44.20



			Depth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(feet)	(feet, MSL)	(teet)	(feet)	(feet, MSL)
MW-1 (1)	26-Mar-02	68.57	22.71	23.81	44.76	1.10	0.84	45.60
MW-2 (1)	26-Mar-02	68.20	10.28	10.28	57.92	0.00	0.00	57.92
MW-4	26-Mar-02	71.77	Dry	Dry				
P-4 (1)	26-Mar-02	69.30	23.10	23.10	46.20	0.00	0.00	46.20
MW-5 (1)	26-Mar-02	68.70	23.28	24.07	44.63	0.79	09:0	45.23
MW-8 (1)	26-Mar-02	68.75	23.45	23.45	45.30	0.00	0.00	45.30
MW-9 (1)	26-Mar-02	70.08	23.73	23.73	46.35	0.00	0.00	46.35
MW-10 (1)	26-Mar-02	68.37	24.64	24.64	43.73	0.00	0.00	43.73
MW-11 (1)	26-Mar-02	67.83	23.80	23.80	44.03	0.00	0.00	44.03
MW-12	26-Mar-02	67.48	Dry	Dry				
MW-13	26-Mar-02	99'.29	Dry	Dry				
MW-14 (1)	26-Mar-02	68.77	Dry	Dry				
EX-1	26-Mar-02	69.37	25.03	25.03	44.34	0.00	0.00	44.34
MW-1 (1)	2-Iul-02	68.57	23.65	24.04	44.53	0.39	0.30	44.83
MW-2 (1)	2-Jul-02	68.20	10.25	10.25	57.95	0.00	0.00	57.95
MW-4	2-Jul-02	71.77	Dry	Dry				
P-4(1)	2-Jul-02	69.30	Dry	Dry				
MW-5 (1)	2-Jul-02	68.70	23.90	24.62	44.08	0.72	0.55	44.63
MW-8 (1)	2-Jul-02	68.75	25.70	25.70	43.05	0.00	0.00	43.05
AW-9 (1)	2-Jul-02	70.08	25.95	25.95	44.13	0.00	0.00	44.13
MW-10 (1)	2-Jul-02	68.37	25.80	25.80	42.57	0.00	0.00	42.57
AW-11 (1)	2-Jul-02	67.83	24.62	24.62	43.21	0.00	0.00	43.21
MW-12	2-Jul-02	67.48	Dry	Dry				
MW-13	2-Jul-02	99'.29	Dry	Dry				
MW-14 (1)	2-Jul-02	68.77	Dry	Dry				***************************************
EX-1	2-Jul-02	69.37	25.55	25.58	43.79	0.03	0.02	43.81



Well	Date	Top of PVC	Depth to Fluid/Air	Depth to Product/Water	Elevation of Groundwater	Floating Product	Correction for Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(teet)	(feet)	(feet, MSL)	(teet)	(teet)	(feet, MSL)
MW-1 (1)	20-Sep-02	68.57	Dry	Dry				
MW-2 (1)	20-Sep-02	68.20	10.31	10.31	57.89	0.00	0.00	57.89
MW-4	20-Sep-02	71.77	Dry	Dry				
P-4 (1)	20-Sep-02	08.30	Dry	Dry				
MW-5 (1)	20-Sep-02	68.70	24.45	24.49	44.21	0.04	0.03	44.24
MW-8 (1)	20-Sep-02	68.75	27.12	27.12	41.63	0.00	00:00	41.63
MW-9 (1)	20-Sep-02	70.08	27.64	27.64	42.44	0.00	0.00	42.44
(1) (1)	20-Sep-02	68.37	27.00	27.00	41.37	00.0	0.00	41.37
MW-11 (1)	20-Sep-02	67.83	25.71	25.71	42.12	0.00	0.00	42.12
MW-12	20-Sep-02	67.48	Dry	Dry				
MW-13	20-Sep-02	99:29	Dry	Dry				
MW-14 (1)	20-Sep-02	68.77	Dry	Dry				
EX-1	20-Sep-02	69.37	26.68	26.68	42.69	0.00	0.00	42.69
MW-1 (1)	16-Dec-02	68.57	Dry	Dry				
MW-2 (1)	16-Dec-02	68.20	7.25	7.25	60.95	0.00	0.00	60.95
MW-4	16-Dec-02	71.77	Dry	Dry				
P-4 (1)	16-Dec-02	06.30	Dry	Dry				
MW-5 (1)	16-Dec-02	68.70	Dry	Dry				
MW-8 (1)	16-Dec-02	68.75	28.01	28.01	40.74	0.00	0.00	40.74
MW-9 (1)	16-Dec-02	70.08	28.95	28.95	41.13	0.00	0.00	41.13
MW-10 (1)	16-Dec-02	68.37	28.09	28.09	40.28	0.00	0.00	40.28
MW-11 (1)	16-Dec-02	67.83	26.77	26.77	41.06	0.00	0.00	41.06
MW-12	16-Dec-02	67.48	Dry	Dry				
MW-13	16-Dec-02	99.29	Dry	Dry				
MW-14 (1)	16-Dec-02	68.77	Dry	Dry				
EX-1	16-Dec-02	69.37	27.62	27.62	41.75	0.00	0.00	41.75



Well	Date	Top of PVC	Depth to Fluid/Air	Depth to Product/Water	Elevation of Groundwater	Floating Product	Correction for Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(teet)	(feet, MSL)	(feet)	(feet)	(feet, MSL)
MW-1 (1)	20-Mar-03	68.57	Dry	Dry				
MW-2 (1)	20-Mar-03	68.20	10.26	10.26	57.94	0.00	0.00	57.94
MW-4	20-Mar-03	71.77	Dry	Dry				
P-4 (1)	20-Mar-03	69.30	Dry	Dry				
MW-5 (1)	20-Mar-03	02.89	Dry	Dry				
MW-8 (1)	20-Mar-03	68.75	27.02	27.02	41.73	0.00	0.00	41.73
MW-9 (1)	20-Mar-03	70.08	27.44	27.44	42.64	0.00	0.00	42.64
MW-10(1)	20-Mar-03	68.37	27.53	27.53	40.84	0.00	0.00	40.84
MW-11 (1)	20-Mar-03	67.83	26.47	26.47	41.36	0.00	0.00	41.36
MW-12	20-Mar-03	67.48	Dry	Dry				
MW-13	20-Mar-03	99'29	Dry	Dry				
MW-14 (1)	20-Mar-03	68.77	Dry	Dry				
EX-1	20-Mar-03	69.37	27.35	27.35	42.02	0.00	0.00	42.02
MW-1 (1)	24-Jun-03	68.57	Dry	Dry				
MW-2 (1)	24-Jun-03	68.20	10.42	10.42	57.78	0.00	0.00	57.78
MW-4	24-Jun-03	71.77	Dry	Dry				
P-4 (1)	24-Jun-03	69.30	Dry	Dry				
MW-5 (1)	24-Jun-03	68.70	Dry	Dry				
MW-8 (1)	24-Jun-03	68.75	28.06	28.06	40.69	0.00	0.00	40.69
MW-9 (1)	24-Jun-03	70.08	28.50	28.50	41.58	0.00	0.00	41.58
MW-10 (1)	24-Jun-03	68.37	NM	NM			0.00	0.00
MW-11 (1)	24-Jun-03	67.83	26.74	26.74	41.09	0.00	0.00	41.09
MW-12	24-Jun-03	67.48	Dry	Dry				
MW-13	24-Jun-03	99.29	Dry	Dry				
MW-14 (1)	24-Jun-03	68.77	Dry	Dry				
EX-1	24-Jun-03	69.37	Dry	Dry				



## TABLE 5. GROUNDWATER ELEVATION DATA SINCE 1997 The Barlow Company

		Hydraulic	Potential *	(feet, MSL
	Correction for	Product Free Product	Thickness (Factor of 0.76)*	(feet)
		Product	Thickness	(teet)
itreet lifornia	Elevation of	Groundwater	Uncorrected	(feet, MSL)
200 Morris Street Sebastopol, California	Depth to	Product/Water   Groundwater	Interface	(feet)
	Depth to	Fluid/Air	Interface	(feet)
		Top of PVC	Elevation	(Feet, MSL)
		Date	Measured	
		Well	Number	

-										<u> </u>	Γ	Π	Π_	ļ		<u> </u>	Ι	<u> </u>	Γ						Ι.	Γ
	55.12				38.45	39.36		39.93				**************************************		57.65				37.11	37.93		37.61			***	37.07	
	0.00				0.00	0.00		0.00				***************************************		0.00			SEANING AND SEASON SEANING THE SEASON SE	00'0	00:0		0.00				0.00	
	0.00				0.00	0.00		0.00						0.00				0.00	0.00		0.00				0.00	
	55.12				38,45	39.36		39.93						57.65			Anna de	37.11	37.93		37.61				37.07	
Dry	13.08	Dry	Dry	Dry	30.30	30.72	NM	27.90	Dry	Dry	Dry	Dry	NM	10.55	NM	MZ	NM	31.64	32.15	M	30.22	NM	NM	MZ	31.12	NIM
Dry	13.08	Dry	Dry	Dry	30.30	30.72	NM	27.90	Dry	Dry	Dry	Dry	NM	10.55	NM	NM	NM	31.64	32.15	NM	30.22	MN	NM	NM	31.12	NTA
68.57	68.20	71.77	69.30	68.70	68.75	70.08	68.37	67.83	67.48	67.66	68.77	69.37	68.57	68.20	71.77	06.69	68.70	68.75	70.08	68.37	67.83	67.48	99:29	68.77	68.19	75 09
11-Sep-03	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04	11-Mar-04												
MW-1 (1)	MW-2 (1)	MW-4	P-4 (1)	MW-5 (1)	MW-8 (1)	MW-9 (1)	MW-10 (1)	MW-11 (1)	MW-12	MW-13	MW-14 (1)	EX-1	MW-1 (1)	MW-2 (1)	MW-4	P-4(1)	MW-5 (1)	MW-8 (1)	MW-9 (1)	MW-10(1)	MW-11 (1)	MW-12	MW-13	MW-14 (1)	MW-15	FX.1



			Depth to	Depth to	Elevation of	Floating	Correction for	
Well	Date	Top of PVC	Fluid/Air	Product/Water	Groundwater	Product	Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(teet)	(feet, MSL)	(teet)	(feet)	(feet, MSL)
MW-1 (1)	7-Jun-04	25.89	NM	NM				
MW-2 (1)	7-Jun-04	68.20	10.60	10.60	57.60	0.00	00.0	57.60
MW-4	7-Jun-04	71.77	NM	NM				
P-4 (1)	7-Jun-04	69.30	NM	NM				
MW-5 (1)	7-Jun-04	68.70	NIN	NIN				
MW-8 (1)	7-Jun-04	68.75	32.83	32.83	35.92	0.00	0.00	35.92
MW-9 (1)	7-Jun-04	70.08	33.40	33.40	36.68	00.0	00.00	36.68
MW-10(1)	7-Jun-04	68.37	31.46	31.46	36.91	0.00	0.00	36.91
MW-11 (1)	7-Jun-04	67.83	31.17	31.17	36.66	0.00	0.00	36.66
MW-12	7-Jun-04	67.48	NM	NM			With the state of	
MW-13	7-Jun-04	99'29	NM	N				
MW-14 (1)	7-Jun-04	68.77	NM	N				
MW-15	8-Jun-04	68.19	31.35	39.80	28.39	8.45	6.42	34.81
EX-1	7-Jun-04	69.37	MM	NM				
MW-1 (1)	22-Oct-04	68.57	NM	NM				
MW-2 (1)	22-Oct-04	68.20	10.82	10.82	57.38	0.00	0.00	57.38
MW-4	22-Oct-04	71.77	NM	NM				
P-4(1)	22-Oct-04	69.30	NM	NM				
MW-5 (1)	22-Oct-04	68.70	NM	NM				
MW-8 (1)	22-Oct-04	68.75	36.04	36.04	32.71	0.00	0.00	32.71
MW-9 (1)	22-Oct-04	70.08	36.70	36.70	33.38	0.00	0.00	33.38
MW-10 (1)	22-Oct-04	68.37	32.23	32.23	36.14	0.00	00.0	36.14
MW-11 (1)	22-Oct-04	67.83	32.17	32.17	35.66	0.00	0.00	35.66
MW-12	22-Oct-04	67.48	NM	NM				
MW-13	22-Oct-04	997.29	M	MM				
MW-14 (1)	22-Oct-04	68.77	NM	NM				
MW-15	22-Oct-04	68.19	36.03	38.68	29.51	2.65	2.01	31.52
MW-16	22-Oct-04	68.33	36.23	36.23	32.10	00.00	0.00	32.10
MW-17	22-Oct-04	69.89	37.60	37.60	31.09	0.00	00.0	31.09
MW-18	22-Oct-04	68.18	37.00	37.00	31.18	0.00	0.00	31.18
MW-19	22-Oct-04	67.65	37.25	37.25	30.40	0.00	0.00	30.40
MW-20	22-Oct-04	68.34	34.21	34.21	34.13	0.00	0.00	34.13
EX-1	22-Oct-04	69.37	MM	NM				

## TABLE 5. GROUNDWATER ELEVATION DATA SINCE 1997

The Barlow Company 200 Morris Street Sebastopol, California

Well	Date	Top of PVC	Depth to Fluid/Air	Depth to Product/Water	Elevation of Groundwater	Floating Product	Correction for Free Product	Hydraulic
Number	Measured	Elevation	Interface	Interface	Uncorrected	Thickness	(Factor of 0.76)*	Potential **
		(Feet, MSL)	(feet)	(teet)	(feet, MSL)	(feet)	(feet)	(feet, MSL)
MW-1 (1)	24-Jan-05	68.57	NM	NIM				
MW-2 (1)	24-Jan-05	68.20	15.43	15.43	52.77	0.00	0.00	52.77
MW-4	24-Jan-05	71.77	NM	NM				
P4(1)	24-Jan-05	06.69	NM	NM				
MW-5 (1)	24-Jan-05	68.70	NM	NM				
MW-8 (1)	24-Jan-05	68.75	36.26	36.26	32.49	0.00	0.00	32.49
MW-9 (1)	24-Jan-05	70.08	36.85	36.85	33.23	0.00	0.00	33.23
MW-10(1)	24-Jan-05	28.37	32.94	32.94	35.43	0.00	0.00	35.43
MW-11 (1)	24-Jan-05	67.83	33.16	33.16	34.67	0.00	0.00	34.67
MW-12	24-Jan-05	67.48	NM	NM				
MW-13	24-Jan-05	99'29	NM	NM				
MW-14 (1)	24-Jan-05	68.77	NM	NM				
MW-15	24-Jan-05	68.19	36.38	38.42	29.77	2.04	1.55	31.32
MW-16	24-Jan-05	68.33	37.25	37.25	31.08	0.00	0.00	31.08
MW-17	24-Jan-05	69:89	37.52	37.52	31.17	0.00	0.00	31.17
MW-18	24-Jan-05	68.18	36.93	36.93	31.25	0.00	0.00	31.25
MW-19	24-Jan-05	67.65	37.05	37.05	30.60	0.00	0.00	30.60
MW-20	24-Jan-05	68,34	36.56	36.56	31.78	0.00	0.00	31.78
EX-1	24-Jan-05	69.37	NM	NM				

MSL = Mean sea level.

= Top of well casings resurveyed by Carlenzoli and Associates on January 25, 1999. Wells showing changes in elevations are MW-1, MW-2, MW-5, and MW-8. <del>- |</del>

= Only product present in well casing. Product thickness is likely greater than measured.

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= Factor is equal to the density of gasoline (assumed to be 0.76 grams per cubic centimeter) divided by the density of groundwater (0.998 grams per cubic centimeter).

= Hydraulic potential is equal to the floating product thickness time the correction factor (0.76), plus the elevation of groundwater uncorrected. \*



## TABLE 6. ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM BORINGS 200 Morris Street Sebastopol, California

		<del></del>		i			ì	1 AFTER	7	
		Camula	TPH as			E4L1	1	MTBE (EDA Took	1,2-	Other Petroleum
Sample	Date	Sample Depth		Benzene	Tolmono	Ethyl-	Varian an	(EPA Test	Dichloro-	Oxygenates and
Number	Sampled			1				Method 8260B)	•	Lead Scavengers
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
SP-2	7/16/1991	16.5-19	190	2,200	2,400	2,200	3,900		-	-
SP-7	7/17/1991	16-21	1.5	25	84	22	110	-	-	
SP-9	7/18/1991	16-17.5	29	3,700	2,700	490	1,500		-	**
SP-11	7/18/1991	14-18.5	17	3,800	160	520	460	_	**	~
SP-12	7/18/1991	15-18	23	3,200	560	1,000	1,100		-	-
B-9	7/18/1991	16-21	5.7	250	64	58	34	-	-	**
B-10	7/18/1991	17-19	1.0	21	3.1	22	2.4	-	*	-
B-11	7/18/1991	16.5-18.5	550	5,800	5,200	760	3,800	-		_
B-12	7/19/1991	16-20	ND	ND	ND	ND	ND	-	-	
K-1	Sep-93	15-20	-	4.3	0.8	<0.6	<0.6		<0.4	-
K-1	Sep-93	31-34	-	<0.5	<0.5	<0.6	<0.6		4.9	<u></u>
K-2	Sep-93	20-23		<0.5	<0.5	<0.6	<0.6		<0.04	-
K-3	Sep-93	17.5-22	-	<0.5	<0.5	<0.6	<0.6	-	<0.4	**
K-3	Sep-93	30-33.5	-	<0.5	<0.5	<0.6	<0.6		5.5	_
K-4	Sep-93	20-24	_	<0.5	<0.5	<0.6	<0.6	_	<0.4	
K-4	Sep-93	34-39		<0.5	<0.5	<0.6	<0.6	*	57	-
K-5 K-5	Sep-93	16-20 31.5-34.5	-	<0.5	<0.5	<0.6	<0.6		<0.4	
	Sep-93		_	<0.5	<0.5	<0.6	<0.6		<0.4	#*
K-6	Sep-93	16.5-19	-	<0.5	<0.5	<0.6	<0.6		<0.4	-
H1W-25 H1W-36	1/18/2001 1/18/2001	25 36-38.5	< 0.05 < 0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	ND
				<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	ND
	1/18/2001	25	< 0.05	<0.5	<0.5	< 0.5	<0.5	<1.0	<1.0	1.02 <sup>1</sup> , 3.33 <sup>2</sup> , 1.65 <sup>3,5</sup>
H2W-35.5	1/18/2001	35.5-36	< 0.05	<0.5	<0.5	<0.5	<0.5	1.01	<1.0	1.75 <sup>2,5</sup>
***************************************	1/22/2001	25	< 0.05	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	2.81 <sup>4,5</sup>
H3W-36	1/22/2001	36-37	< 0.05	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	1.35 <sup>4,5</sup>
	1/19/2001	25	0.35	< 0.5	1.0	<0.5	<0.5	<0.5	17.0	1.15 <sup>1</sup>
H4W-36	1/19/2001	36-37	0.19	<0.5	<0.5	<0.5	<0.5	<0.5	14.5	ND
	1/31/2001	25	0.10	4.6	<0.5	<0.5	<0.5	<1.0	2.59	ND
H5W-36	1/31/2001	33-34.5	0.10	3.9	<0.5	<0.5	0.79	<0.5	4.36	ND
	1/17/2001		< 0.05	<0.5	<0.5	<0.5	<0.5	<0.5	0.963	ND
H6W-35	1/17/2001	35-37	< 0.05	<0.5	<0.5	<0.5	<0.5	0.642	16.0	ND
H7W-25	2/1/2001	25	< 0.05	<0.5	<0.5	<0.5	<0.5	<0.5	0.621	ND
H7W-36	2/1/2001	36-39.5	< 0.05	<0.5	<0.5	<0.5	<0.5	<0.5	19.1	ND
H8W-25 H8W-36	2/2/2001 2/2/2001	25 36-37	< 0.05 < 0.05	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.50	ND ND
	**************************************			***************************************		<0.5	<0.5	<1.0	56.1	ND
H9W-25 H9W-36	2/2/2001 2/2/2001	25 36.5-39	<b>4.1</b> < 0.05	170 <0.5	1.1 <0.5	<0.5 <0.5	2.1 <0.5	<50.0 5.08	<50.0 <0.50	ND ND
22/11/00	1 -/ -/ 4001	00.0-07	_ v.03	1 \0.0	70.0	70.0	. ~0.0	1 3.00	<u> </u>	אט



## TABLE 6. ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM BORINGS $200~\mathrm{Morris}$ Street

Sebastopol, California

			MW4					A CTTO		
		Sample	TPH as			Ethyl-		MTBE	1,2-	Other Petroleum
Sample	Date	Depth		Benzene	Tolyono		Valonas	(EPA Test	Dichloro-	Oxygenates and
Number	Sampled			μg/l)				Method 8260B)		Lead Scavengers
	1/22/2001				(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
	1/22/2001		< 0.05	<0.5	<0.5	<0.5	<0.5	< 0.5	< 0.50	ND
111011-37	1/22/2001	3/-39	2.2	110	2.0	< 0.50	1.1	<10.0	52.1	ND
H11W1	3/25/2002	27-32	< 0.05	<0.50	< 0.50	. <0.50	< 0.50	<1.0	<0.50	ND⁵
H11W2	3/25/2002	35-37	< 0.05	< 0.50	<0.50	<0.50	<0.50	<1.0	< 0.50	ND <sup>5</sup>
H11W3	3/25/2002	50-52	< 0.05	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50	ND⁵
H12W1	3/28/2002	29-34	< 0.05	<0.50	<0.50	< 0.50	<0.50	<1.0	< 0.50	ND⁵
H12W2	3/28/2002	35-37	< 0.05	< 0.50	<0.50	<0.50	<0.50	1.35	< 0.50	$ND^5$
H12W3	3/28/2002	50-52	< 0.05	<0.50	<0.50	<0.50	<0.50	< 1.0	<0.50	ND <sup>5</sup>
H13W1	3/27/2002	25-30	< 0.05	<0.50	<0.50	< 0.50	<0.50	< 1.0	<0.50	ND <sup>5</sup>
H13W2	3/27/2002	35-37	< 0.05	<0.50	<0.50	<0.50	<0.50	< 1.0	9.87	ND <sup>5</sup>
H13W3	3/27/2002	50-52	< 0.05	<0.50	<0.50	<0.50	<0.50	< 1.0	6,84	ND <sup>5</sup>
H15W1	3/27/2002	30-35	< 0.05	< 0.50	<0.50	<0.50	<0.50	< 1.0	1.58	$\overline{\mathrm{ND}^{5}}$
H15W2	3/27/2002	35-37	< 0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0	2.03	ND <sup>5</sup>
H15W3	3/27/2002	50-52	< 0.05	<0.50	< 0.50	<0.50	<0.50	< 1.0	2.06	ND⁵
H17W1	3/25/2002	5 -10	< 0.05	<0.50	0.870	<0.50	<0.50	< 1.0	<0.50	ND <sup>5</sup>
H17W2	3/25/2002	35-37	< 0.05	<0.50	< 0.50	<0.50	<0.50	1.52	1.39	ND <sup>5</sup>
H18W1	3/26/2002	25-30	< 0.05	<0.50	< 0.50	< 0.50	<0.50	< 1.0	2.58	$ND^5$
H18W2	3/26/2002	35-37	< 0.05	< 0.50	<0.50	<0.50	<0.50	< 1.0	6.32	ND <sup>5</sup>

Note: Samples collected prior to 2001 were collected by Kleinfelder

mg/l = Milligrams per lier which is equivalent to parts per million (ppm)

μg/l = Micrograms per lier which is equivalent to parts per billion (ppb)

ND = Not detected at laboratory reporting limit

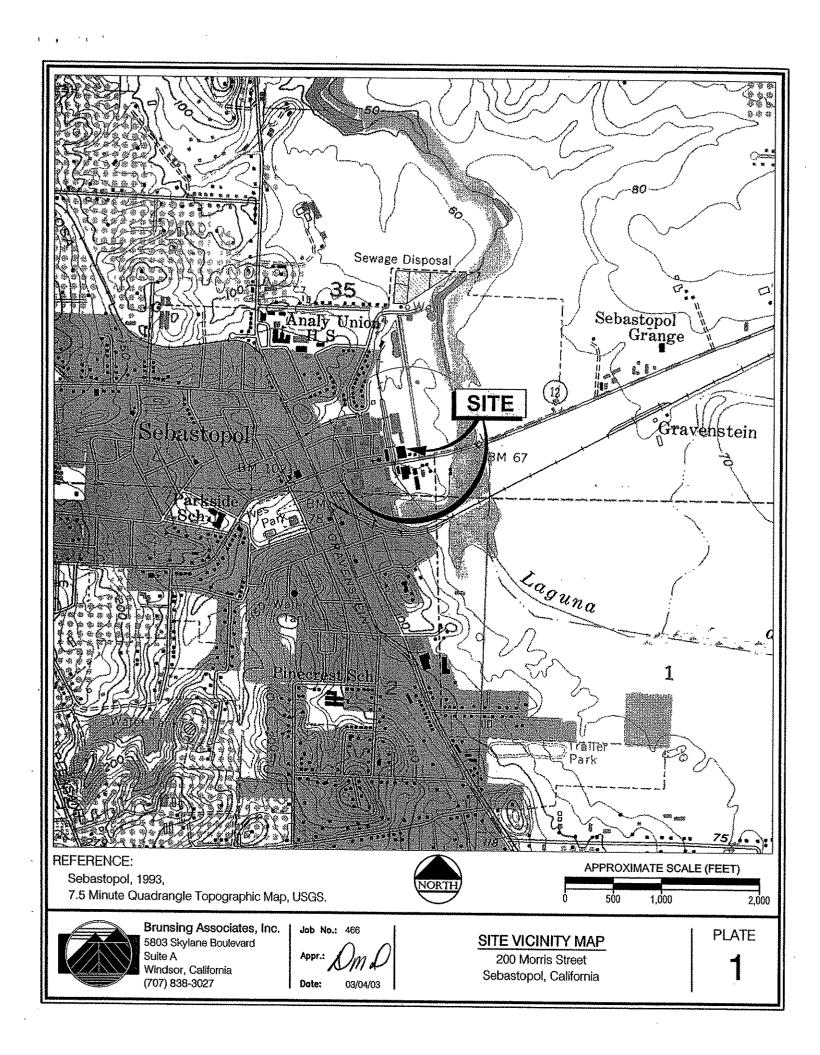
bgs = Below ground surface

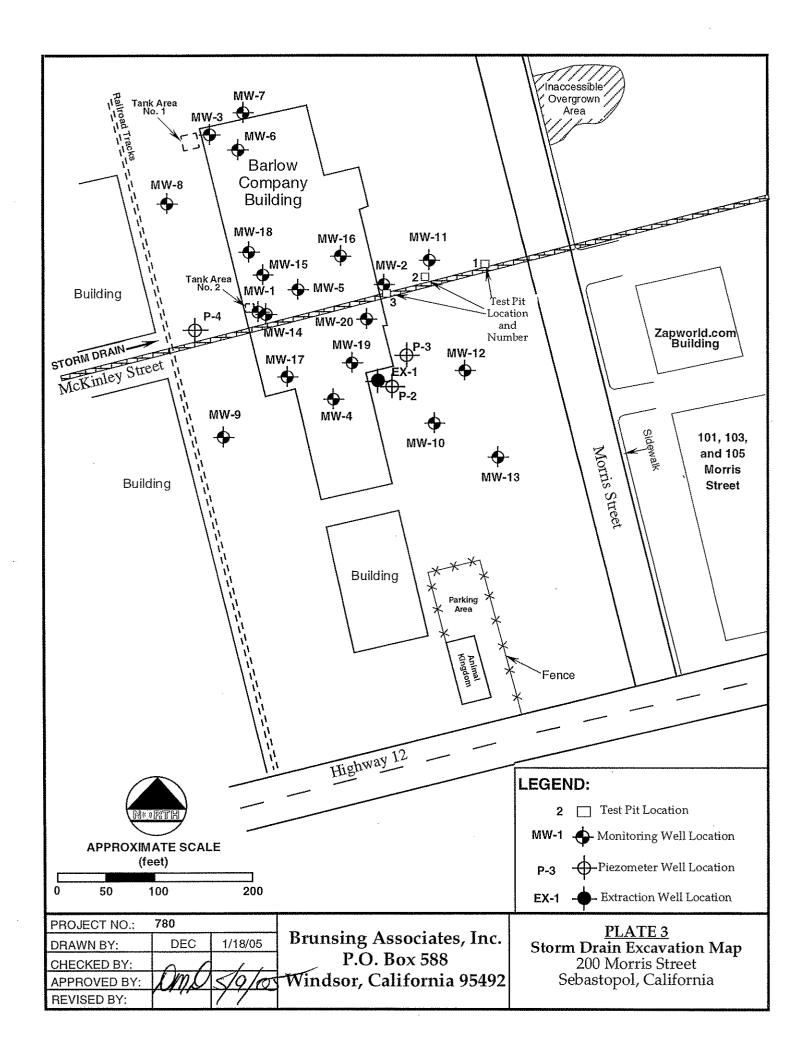
- = Not analyzed
- < = Not reported at given laboratory reporting limit
- <sup>1</sup> = Di-isopropyl Ether
- <sup>2</sup> = Tetrachloroethene
- 3 = Trichloroethene
- $^4$  = Napthalene
- $^{5}$  = Also analyzed for full list of EPA Test Method 8260 compunds, only those detected are listed

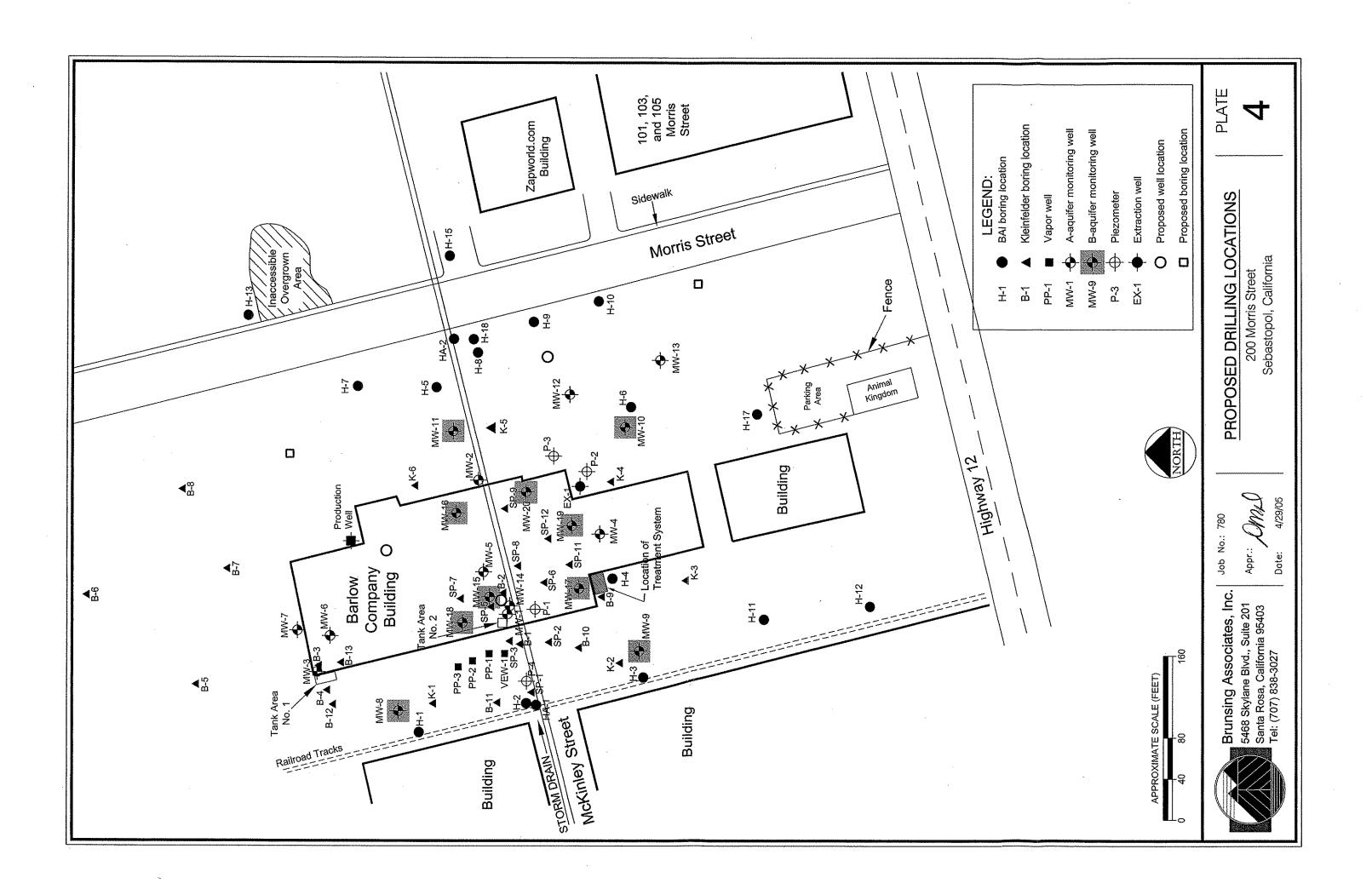


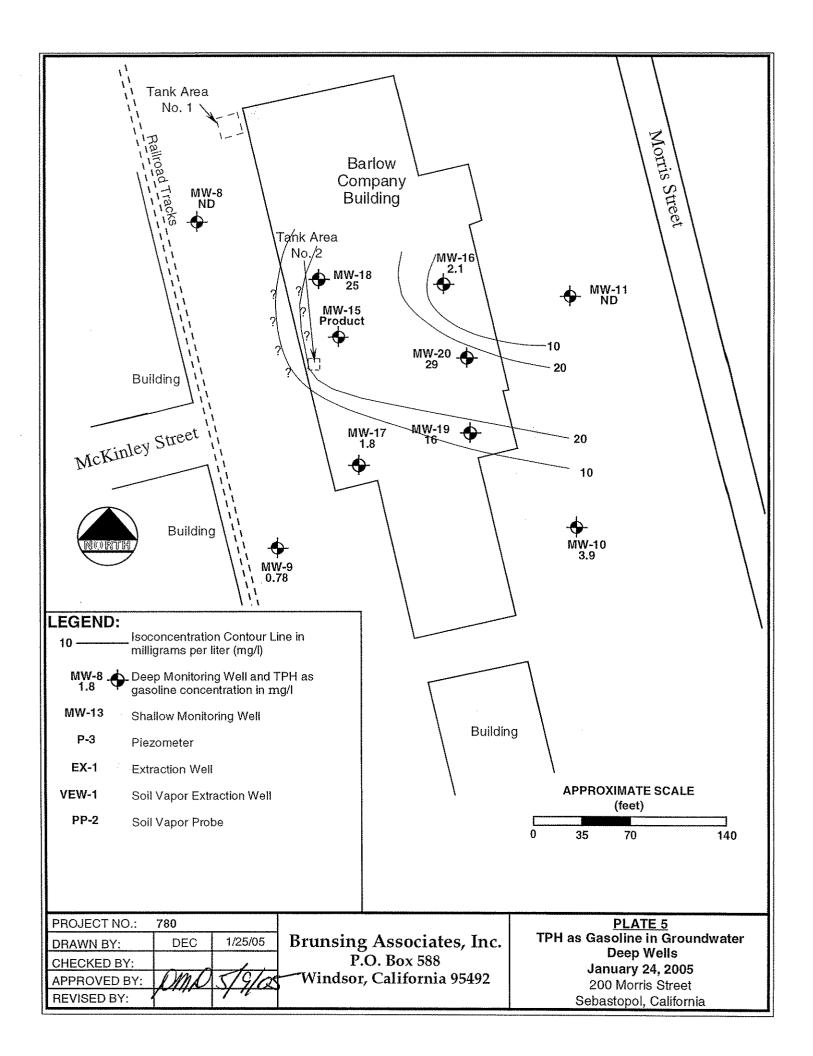
## **PLATES**











# APPENDIX A GROUNDWATER SAMPLING PROTOCOL



# **Groundwater Sampling Protocol**

## **Monitoring Wells**

Prior to purging a monitoring well, groundwater levels are measured with a Solinst electric depth measurement device, or an interface probe, in all wells that are to be measured. At sites where petroleum hydrocarbons are possible contaminants, the well is checked for floating product using a clear bailer, a steel tape with water/oil paste, or an interface probe, during the initial sampling round. If floating product is measured during the initial sampling round or noted during subsequent sampling rounds, floating product measurements are continued.

After the water level and floating product measurements are complete, the monitoring well is purged until a minimum of three casing volumes of water are removed, water is relatively clear of sediment, and pH, conductivity, and temperature measurements of the water become relatively stabile. If the well is purged dry, groundwater samples are collected after the water level in the well recovers to at least 80 percent of the original water column measured in the well prior to sampling, or following a maximum recovery period of two hours. The well is purged using a factory-sealed, disposable, polyethylene bailer, a four-inch diameter submersible Grundfos pump, a two-inch diameter ES-40 purge pump, or a peristaltic pump. The purge water is stored on-site in clean, 55-gallon drums.

A groundwater sample is collected from each monitoring well following reequilibration of the well after purging. The groundwater sample is collected using a factory-sealed disposable, polyethylene bailer with a sampling port, or a factory-sealed Teflon bailer. A factory provided attachment designed for use with volatile organic compounds (VOCs) is attached to the polyethylene bailer sampling port when collecting samples to be analyzed for VOCs. The groundwater sample is transferred from the bailer into sample container(s) that are obtained directly from the analytical laboratory.

The sample container(s) is labeled with a self-adhesive tag. The following information is included on the tag:

- Project number
- Sample number
- Date and time sample is collected
- Initials of sample collector(s).



Individual log sheets are maintained throughout the sampling operations. The following information is recorded:

- Sample number
- Date and time well sampled and purged
- Sampling location
- Types of sampling equipment used
- Name of sampler(s)
- Volume of water purged.

Following collection of the groundwater sample, the sample is immediately stored on blue ice in an appropriate container. A chain-of-custody form is completed with the following information:

- Date the sample was collected
- Sample number and the number of containers
- Analyses required
- Remarks including preservatives added and any special conditions.

The original copy of the chain-of-custody form accompanies the sample containers to a California-certified laboratory. A copy is retained by BAI and placed in company files.

Reusable sampling equipment including thermometers, pH electrodes, and conductivity probes are cleaned both before and after their use at the site. The following cleaning procedures are used:

- Wash with a potable water and detergent solution or other solutions deemed appropriate
- Rinse with potable water
- Double-rinse with organic-free or deionized water
- Package and seal equipment in plastic bags or other appropriate containers to prevent contact with solvents, dust, or other contaminants.

In addition, the pumps are cleaned by pumping a potable water and detergent solution and deionized water through the system. Cleaning solutions are contained on-site in clean 55-gallon drums.

## **Domestic and Irrigation Wells**

Groundwater samples collected from domestic or irrigation wells are collected from the spigot that is the closest to the well. Prior to collecting the sample, the spigot is allowed to flow for at least 5 minutes to purge the well. The sample is then collected directly into laboratory-supplied containers, sealed, labeled, and stored on blue ice in an appropriate container, as described above. A chain-of-custody form is completed and submitted with the samples to the analytical laboratory.



# APPENDIX B SITE HEALTH AND SAFETY PLAN



# SITE HEALTH AND SAFETY PLAN

# 200 Morris Street Sebastopol, California

Prepared for:

Mr. Ken Martin P.O. Box 11218 Santa Rosa, California 95406

Prepared by:

Brunsing Associates, Inc. P. O. Box 588 Windsor, California (707) 838-3027

Project No. 780

May 9, 2005



# SITE HEALTH AND SAFETY PLAN

# 200 Morris Street Sebastopol, California

Prepared by:

David Conley, R.G. Senior Geologist

Reviewed by:

Diana M. Dickerson, R.G., R.E.A.

Principal Geologist



# TABLE OF CONTENTS

1.0	INTRODUCTION	Page No.		
2.0	KEY PERSONNEL	1		
3.0	PROJECT HAZARD ANALYSIS	2		
	3.1 Potential Site Safety Hazards			
	3.1.1 Drill Rig Safety Hazards	2 2		
	3.1.2 Soil Handling and Excavation Hazards	3		
	3.2 Mitigation of Potential Hazards	3		
	3.2.1 Striking Underground and Overhead Utilities	3		
	3.2.2 Exposure to Petroleum Products and Chemical Hazards	3		
	3.2.2.1 Inhalation	4		
	3.2.2.2 Skin Absorption	5		
	3.2.2.3 Ingestion	6		
	3.2.2.4 Eye Contact	6		
	3.2.3 Noise Exposure	6		
	3.2.4 Falling, Slipping and Tripping	7		
	3.2.5 Entering Trenches/Excavation	7		
	3.2.6 Heat Stress	7		
4.0	WORK ZONES AND SECURITY MEASURES 7			
5.0	DECONTAMINATION PROCEDURES	8		
6.0	EMERGENCY RESPONSE INFORMATION			
7.0	HEALTH AND SAFETY MEETING			

# PLATE:

Plate C1 - Hospital Route Map

# ATTACHMENTS:

Attachment A - Health and Safety Plan Signature Fom



#### 1.0 INTRODUCTION

This Site Health and Safety Plan (Plan), outlines recommended health and safety procedures to be followed by personnel during environmental work conducted at the subject site. This Plan is designed in accordance with the requirements of OSHA Title 29, CFR 1910.120, "Hazardous Waste Operations and Emergency Response". The Plan is intended to accomplish the following:

Assure that both project personnel and public health and safety concerns are properly addressed, provide site management with sufficiently detailed information to implement all health and safety functions at the site, provide site workers with appropriate specific health and safety guidelines, be useful in training workers in the hazards specific to the remediation project.

The procedures presented herein are intended to serve as guidelines; they are not a substitute for the sound judgment of on-site personnel. As work progresses, appropriate revisions will be made by the Site Safety Officer, Project Geologist, Project Engineer, Project Manager, and/or Field Manager as warranted. All subcontractors that work within the exclusion zone will be ultimately responsible for the health and safety of their employees on this project and will be expected to provide a task specific Health and Safety Plan to supplement this plan.

#### 2.0 KEY PERSONNEL

The key supervisory personnel that may work on the project are named below. Each of these individuals has completed a minimum of 40 hours of hazardous waste site operations training and yearly eight hour refresher training.

Diana M. Dickerson, Brunsing Associates, Inc., Division Manager

David Conley, Brunsing Associates, Inc., Senior Geologist/Site Safety Officer

Steve Silva, Brunsing Associates, Inc., Staff Geologist/Site Safety Officer/Project Manager

Bill Coset, Brunsing Associates, Inc., Project Geologist/Site Safety Officer

Chris Scott, Brunsing Associates, Inc., Senior Engineering Technician



#### 3.0 PROJECT HAZARD ANALYSIS

The following discussion provides information about the physical and health hazards that may be encountered on this project. The main physical hazards will be associated with one or more of the following: drilling and excavation operations, movement and operation of heavy equipment, underground and overhead utilities, potential slip, trip and fall hazards, and noise hazards. The main chemical hazard will be exposure to petroleum products, which may be encountered in soils and/or groundwater at a range of concentrations. Not all of the tasks listed below will need to be performed to complete the project.

## 3.1 Potential Site Safety Hazards

#### 3.1.1 Drill Rig Safety Hazards

The operation of a drill rig is recognized as a hazardous activity given the nature of the equipment and the field environment in which the drill rig will operate. The principal hazards associated with drill rig operation will include:

Striking underground and overhead utilities

Exposure to petroleum products

Noise exposure

Falling, slipping, and tripping.

Breathing in cement dust during grouting operations. To avoid this physical safety hazard, the drilling firm employed as a subcontractor will instruct their staff of the safety procedures to follow in operating the equipment. The remaining workers on the project will stay upwind of the drilling operation whenever possible and maintain a safe distance from the drilling activities at all times.

Pinch points and guarding. To avoid this physical safety hazard, all drill rigs must be equipped with guards on all gears, pulleys and rotating shafts. The drilling firm employed as a subcontractor will comply with OSHA and industry standards as a condition of work.

Overhead work and cable handling. To avoid falling equipment and cable handling risks, drillers will be required to maintain equipment in safe condition and conduct daily inspections of the equipment. Hardhats will be required for all personnel working on or around drill rigs.

Drilling contractor employees will be required to meet the 29 CFR 1910.120 requirements for 40 hours of safety training. Drilling employees will be required to follow safe work practices including: not wearing loose clothing, wearing hardhats, safety glasses and steel toed boots, wearing gloves when handling contaminated soils and maintaining awareness of drill rig operations.



#### 3.1.2 Soil Handling and Excavation Hazards

The operation of heavy earthmoving and excavating equipment in a construction environment is potentially hazardous. The following are specific hazards associated with such operations:

Striking underground utilities

Exposure to petroleum products

Noise exposures

Falling, slipping, and tripping

Entering trenches/excavations.

Heavy equipment and excavation equipment hazards. These hazards are primarily related to maintenance, the condition of and proper operation of the equipment. The excavation contractor will be required to have heavy equipment safety programs in place, including inspections and maintenance, and will be expected to meet all applicable safety equipment requirements. Operators will be required to operate equipment in a cautious manner consistent with industry standards and have specialized training in hazardous waste site work pursuant to 29 CFR 1910.120

## 3.2 Mitigation of Potential Hazards

#### 3.2.1 Striking Underground and Overhead Utilities

The potential for striking utilities, especially gas and electric, will be a concern throughout drilling and excavating operations. The following rules will govern all drilling/excavation tasks:

Prior to drilling/excavating, contact all underground utility companies to have locations of utility lines marked and identified.

All elevated equipment must be kept no less than 20 feet from any overhead utility lines, unless prior approval is given by utility companies or special conditions are met.

#### 3.2.2 Exposure to Petroleum Products and Chemical Hazards

Prior testing at the site has identified petroleum hydrocarbon contamination. The fuel constituents that may be encountered and the potential exposure pathways are described below.

Constituents of diesel that may be encountered include:

Benzene, toluene, ethylbenzene, and xylenes.

Constituents of gasoline that may be encountered include:

Benzene, toluene, ethylbenzene, and xylenes.



Constituents can enter the body through:

Inhalation, ingestion, and absorption through the skin.

The result from exposures can include:

Eye/nose/throat/skin irritation, headache, fatigue, nausea, dizziness, dermatitis, nervousness, weakness, insomnia, and constipation.

The primary method for avoiding exposure to petroleum products on the project, will be establishing a monitoring program and assigning the appropriate personal protective equipment (PPE). Work will commence with personnel in Level D PPE, consisting of hard hats, safety glasses/goggles, long pants and shirts, gloves and steel-toed boots. Site workers will be required to upgrade to Level C PPE, consisting of respirators with organic vapor and dust cartridges, and/or tyvek coveralls, and chemical resistant gloves as warranted by site conditions. If gasoline is a potential contaminant, a photoionization detector (PID) will be used to monitor concentrations of volatile organic compounds in work areas as described below.

#### 3.2.2.1 Inhalation

Breathing a gas, vapor, mist, fume, or dust is the most common accidental form of exposure; this route of entry is the most likely to cause systemic illness. Half-face respirators with the appropriate cartridges or dust filters may be required while conducting sampling, excavating, construction, drilling, or well development operations. No excessive facial hair, which interferes with a satisfactory fit of the mask-to-face seal, will be allowed on personnel required to wear respiratory protective equipment.

Listed below are threshold limit values which will be used in determining when exposure to organic gasoline vapors is sufficient to require use of respirators by on- site personnel. Two exposure indices are given: The Time Weighted Average (TWA) defined as the average concentration for a normal eight-hour workday and a forty-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect; and the Short-Term Exposure Limit (STEL) defined as a fifteen minute TWA exposure which should not be exceeded at any time during a workday and should not be reached more than four times in a work day with a minimum of one hour between exposures. The values shown below represent published values as determined by either the American Conference of Governmental Industrial Hygienists or the Occupational Safety and Health Administration guidelines.

**Individual Hazard Evaluation Parameters** 

Gasoline:  $TWA = 300 \text{ ppm or } 890 \text{ mg/m}^3$ 

 $STEL = 500 \text{ ppm or } 1,480 \text{ mg/m}^3$ 

Benzene:  $TWA = 1 \text{ ppm or } 3 \text{ mg/m}^3$ 

 $STEL = 5 \text{ ppm or } 15 \text{ mg/m}^3$ 

Toluene:  $TWA = 100 \text{ ppm or } 377 \text{ mg/m}^3$ 

 $STEL = 150 \text{ ppm or } 560 \text{ mg/m}^3$ 



Ethylbenzene:  $TWA = 100 \text{ ppm or } 434 \text{ mg/m}^3$ 

 $STEL = 125 \text{ ppm or } 543 \text{ mg/m}^3$ 

Xylenes:  $TWA = 100 \text{ ppm or } 434 \text{ mg/m}^3$ 

 $STEL = 150 \text{ ppm or } 651 \text{ mg/m}^3$ 

Notes: ppm= parts per million; mg/m<sup>3</sup>= milligrams per cubic meter

Photoionization detectors read total organic vapors (TOVs), which include all constituents of gasoline and other volatile compounds. Because of the low TWA and STEL limits for benzene, this gasoline constituent is of the most concern for worker exposure. In general, the maximum amount of benzene in gasoline is less than 4%. Based on this data, it appears that a conservative estimate of the percentage of benzene which may be in organic vapors measured with the PID would be 10%.

Based on the assumption that the maximum amount of benzene possible in the TOV readings is 10%, a reading of 10 ppm on the PID would give an estimated 1 ppm of benzene, which is the TWA level for benzene. Therefore, it will be assumed that the site specific TWA threshold for benzene will be reached when TOV levels measured with the PID reach 10 ppm, and the STEL threshold for benzene will be reached when TOV levels reach 50 ppm. Respirators will be donned as described below.

Respirators will be donned when TOV readings in the breathing zone reach 50 ppm for at least 5 minutes or at any time that TOV readings exceed 50 ppm.

Respirators will be donned when TOV readings in the breathing zone reach 10 ppm for periods exceeding 15 minutes.

Half face respirators are generally considered to provide a 10x protection factor. To be conservative with the health and safety of on-site personnel, should TOVs in the breathing zone exceed 5 times the STEL (250 ppm) at any time, or 5 times the TWA (50 ppm) for periods exceeding 15 minutes, personnel will stop work and evacuate the area until concentrations return to less than these threshold levels.

#### 3.2.2.2 Skin Absorption

Skin exposure to hazardous materials may result in skin irritation or penetration. Skin penetration is probably the second most common accidental means of entry of chemicals into the body. The following precautions may be required when performing any on-site activities described in this plan.

Ensure that all skin areas that may be contacted are protected during site work by wearing rubber boots and gloves.



Disposable coveralls should be donned whenever site work brings the outer clothing of any personnel in contact with contaminated soils, liquids or surfaces.

After completing the day's work, remove and dispose of contaminated coveralls; care should be taken to avoid skin contact with these items.

Unnecessary contact with potentially contaminated surfaces should be avoided; whenever possible, personnel should avoid walking through mud, puddles, and other discolored surfaces; kneeling on the ground; leaning, sitting, or placing equipment on drums, other containers, vehicles, or the ground.

#### 3.2.2.3 Ingestion

Hazardous materials may be carried to the mouth by hand when eating, drinking, chewing gum or tobacco, or smoking. These activities are therefore prohibited during and after work until contaminated clothing has been removed. In addition, liquids will not be pipetted or syphoned by mouth under any circumstances. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other ingestion occurs.

Medically prescribed drugs used by personnel during field activities where the potential for inhalation, absorption, or ingestion of toxic substances exists should be used only after consultation with a qualified physician.

## 3.2.2.4 Eye Contact

The eyes may be harmed by chemicals in solid, liquid, or vapor form. Irritant effects vary in degree from mild to severe. The following precautions to avoid eye injury will be taken when at the site:

Do not wear contact lenses when working or while wearing contaminated gloves or other contaminated clothing.

Do not rub eyes while working.

Safety goggles or glasses (without side perforations) may be required by the Site Health & Safety Officer.

## 3.2.3 Noise Exposure

Drilling and excavation equipment presents potentially high noise level exposures. Excessive noise interferes with communication, disorients workers and can result in hearing loss. Ideally, personnel who do not need to be near noisy equipment will stay as far away as possible to lower risk of hearing loss. Personnel who must work near noisy equipment shall wear hearing protection such as ear plugs or muffs.



## 3.2.4 Falling, Slipping and Tripping

The ground around the work area may be cluttered with pieces of equipment. This situation may cause workers to trip and fall. Project personnel shall reduce the risk of falling, slipping, and tripping by performing good housekeeping and arranging the work area in a manner that reduces the necessity of workers to step over equipment whenever possible.

#### 3.2.5 Entering Trenches/Excavations

These areas present serious potential hazards due to the possible accumulation of hazardous atmospheres, insufficient oxygen content, and cave-ins or collapse of trench walls. With respect to trenches/excavations entered by workers exceeding five feet in depth, specific regulatory requirements appear in Subpart P of 29 CFR Part 1928. If a trench/excavation greater than five feet deep must be entered, the trench/excavation wall must be either shored or a protective box placed in the trench to avoid wall collapses. Vehicles and other equipment near excavations shall remain at a safe distance. Barriers may have to be used to prevent encroachment. Stockpiling of soil removed from excavations shall be done in a manner which minimizes the risk of cave-ins.

Prior to entering any trench/excavation, a PID will be used to monitor concentrations of organic compounds in the trench/excavation. PID readings will be taken for every 10 to 15 feet of trench by the Site Health & Safety Officer or another qualified user. Should organic concentrations in the trench/excavation exceed 50 ppm, or 10 ppm for periods of 15 minutes or more, anyone entering the trench/excavation shall be required to wear respirators with organic vapor and dust cartridges. Should concentrations of organic compounds in the trench exceed 250 ppm, or 50 ppm for periods of 15 minutes or more, personnel will stop work and evacuate the area until concentrations return to below these threshold values.

#### 3.2.6 Heat Stress

Incidents of heat stress depend upon a variety of factors. For workers wearing impermeable and semi-permeable clothing, or respirators, as required with Level C PPE, physiological monitoring will be instituted. The monitoring will begin when the work period is anticipated to exceed one hour and the work required involves significant physical activity in Level C PPE. Workers will be monitored by measuring the heart rate. If the heart rate exceeds 110 beats per minute, the next work cycle will be shortened by one-third. A worker will not be permitted to wear impermeable or semi-permeable clothing and work in a Level C environment if the worker's heart rate continues to exceed 110 beats per minute at the beginning of a rest period even after reducing the length of the work period by two-thirds. Workers will also be required to take breaks as required in OSHA 29 CFR Part 1910.120. All subcontractors will be required to supply their personnel with personal protective equipment, as necessary.

#### 4.0 WORK ZONES AND SECURITY MEASURES

Measures will be taken to prevent access to persons unauthorized to enter a particular work zone. This shall be accomplished by limiting the movement of individuals and equipment between work



zones and establishing access control points, as necessary. Three zones (the construction zone, contamination reduction zone, and exclusion zone) will be established during on-site work.

#### 5.0 DECONTAMINATION PROCEDURES

Prior to leaving the contamination reduction zone, personnel will decontaminate themselves, as deemed necessary to avoid transferring contamination to clean areas of the site. Decontamination will include the following steps, as applicable:

- 1) Deposit equipment exposed to contaminants (tools, sampling devices, etc.) on plastic drop cloths or in plastic garbage bags within the contamination reduction zone if the equipment is not to be immediately cleaned.
- 2) Scrub outer boots and gloves (if worn) with decontamination solution or detergent. Rinse off with clean water.
- Remove tyvek suits, outer boots, and gloves (if worn). Deposit in plastic garbage bags.
- 4) Upon leaving the contamination reduction zone, personnel must thoroughly wash all exposed skin surfaces before eating, drinking, chewing or smoking.
- 5) After daily work is completed, non-reusable protective equipment will be removed and placed in plastic garbage bags for disposal.

All equipment and tools exposed to contaminants will be thoroughly cleaned. The following decontamination procedures will be followed for all equipment.

- 1) Steam clean, or wash all contaminated parts with fresh water and a detergent such as Alconox or Liquinox.
- Rinse washed equipment with fresh water.
- 3) Place decontaminated tools in clean plastic bags.

All subcontractors are responsible for the decontamination of their own equipment.

## 6.0 EMERGENCY RESPONSE INFORMATION

The following procedure will be observed in the event of physical injury or a serious health problem:

1) Immediately notify supervisor and Site Health and Safety Officer.



- 2) Shutdown construction operations.
- Remove injured or exposed person(s) from immediate danger. This action may coincide with steps 1 and 2.
- 4) Perform First Aid as necessary.
- 5) In case of serious injury, call AMBULANCE AT 911 for transport to a local hospital.
- 6) Evacuate other on-site personnel to a safe place until the Site Health and Safety Officer determines that it is safe for work to resume.
- 7) Implement steps to prevent a recurrence of the accident.

The nearest hospital is Palm, Drive Hospital, located at 501 Petaluma Avenue, Sebastopol, California. The location, address, and telephone number of the nearest medical facility is shown on Plate C1. The emergency route map will be posted and made available to all subcontractors on-site.

#### **Emergency Telephone Numbers:**

EMERGENCY/AMBULANCE 911

Palm Drive Hospital (707) 823-8511

Property Owner:

Frank Lambert, Sr. (707) 869-2051

Consultant:

Brunsing Associates, Inc. (707) 838-3027

#### 7.0 HEALTH AND SAFETY MEETING

Prior to commencement of site activities, a safety orientation meeting shall be held to review this Site Health and Safety Plan. During this meeting, all field personnel and subcontractors will be required to have read this Plan, comply with its requirements, and sign a form agreeing to the information and directions set forth in the Plan. Subcontractors will be expected to provide their own Health and Safety Plan. Additional field safety meetings will be held on a weekly basis to accommodate subcontractors arriving to the project at a later date and to answer any questions, which may result from field activities. In the event of an injury or exposure, a safety meeting will be held to discuss the cause and how to avoid future problems.



The safety orientation meeting and field safety meetings will review the following information:

Site hazards, particularly those associated with subcontractor tasks, and actions that can be taken to mitigate these hazards.

Health hazards associated with petroleum substances that may be encountered during construction.

Required personal protective equipment and instructions for use.

Personnel and equipment decontamination procedures.

Emergency response plan.

All subcontractors will be provided with a copy of this Site Health and Safety Plan prior to construction and will be expected to share it with their employees. A copy of this Plan will also be kept available on-site during construction activities.





# ATTACHMENT A

# **Health and Safety Plan Signature Form**



# HEALTH AND SAFETY PLAN SIGNATURE FORM

David E. Conley

200 Morris Street, Sebastopol, California

David Conley, William H. Coset, or Steve Silva

PROJECT:

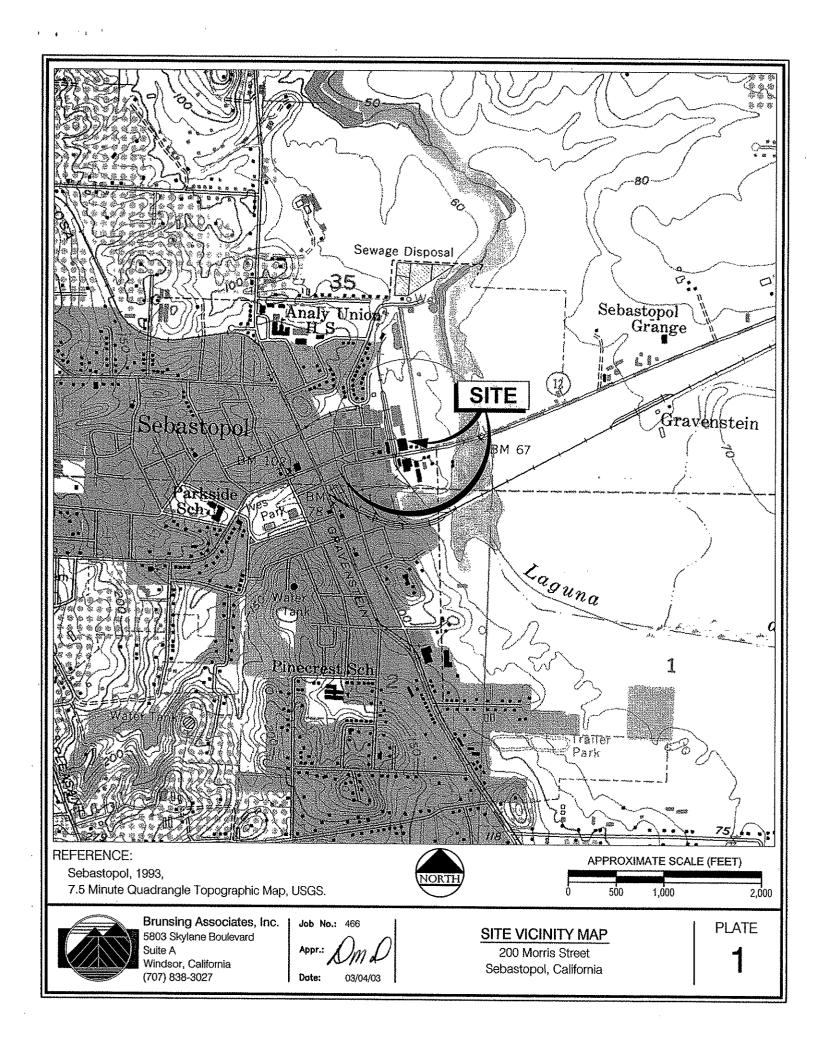
PROJECT MANAGER: SITE SAFETY OFFICER:

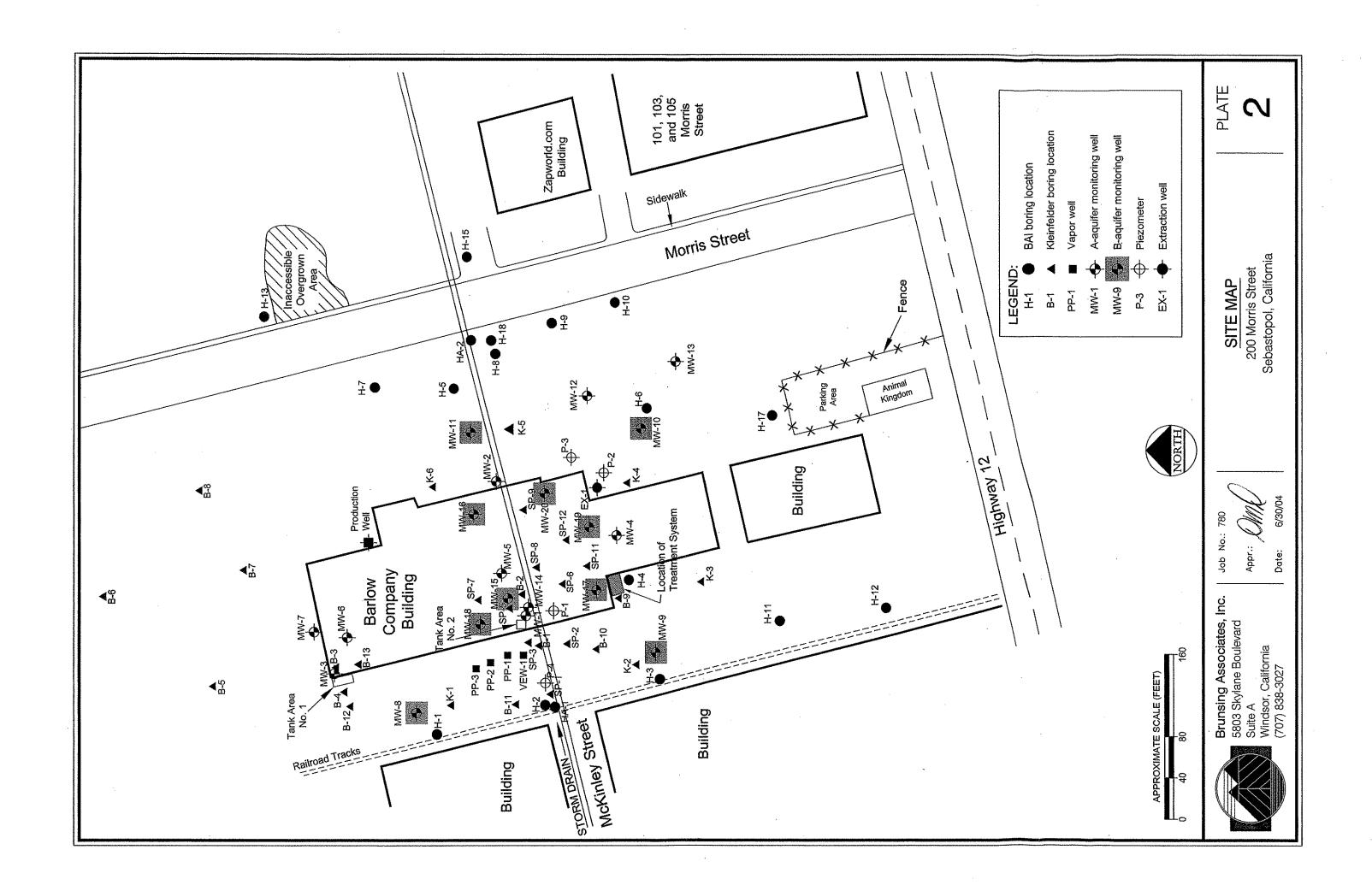
Prior to beginning field activities, I have been given an opportunity to read the contents of this Site Health and Safety Plan and to have my questions answered. By the presence of my signature below, I certify that I have received a copy of this Plan and understood the potential hazards at the site. I further certify that I am in full compliance with OSHA 29 CFR 1910.120.					
SITE PERSONNEL: Name	Signature	Date			
	****				
		WWW. A.			
		***************************************			

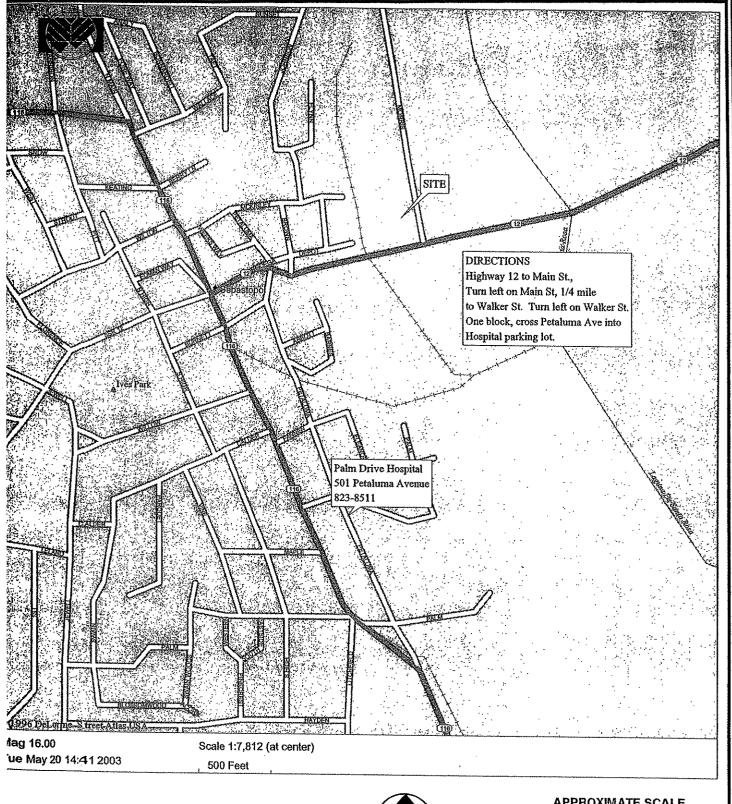


# **PLATES**











APPROXIMATE SCALE (feet)

500 1000

PROJECT NO.: 466				
DRAWN BY:	DEC	5/20/03		
CHECKED BY:				
APPROVED BY:				
REVISED:		*		

Brunsing Associates, Inc. P. O. Box 588 Windsor, California 95492

# PLATE 3 ROUTE TO HOSPITAL MAP Barlow Company

200 Morris Street Sebastopol, California